Capturing the Justice Judgment: An Application of the Theory of Representative Design in two Policy Capturing Studies in Organizational Justice

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Abstract

An understanding of how justice judgments are formed is essential knowledge for practitioners given the adverse consequences which may arise due to perceptions of unfairness. In this thesis, two studies are conducted to explore the overall justice judgment, complying with the principles of representative design in order that the stimuli and situations are relevant and realistic for the sampled participants, and reflect real world decision making processes.

Study 1 adopts a policy capturing design using a sample of 12 Judges to rate the overall fairness of 56 performance appraisals (*N*=672 situations). Study 2 uses Mouselab, a process-tracing tool, to present the stimuli and record the information acquisition processes used by individuals. This study uses *N*=2744 situations on which within- and between- individual analyses are conducted.

The selection process of the 10 cues on which judgments were formed explained around 82% of variance in overall justice judgments. Objective decision making policies are inferred using regressions, and are compared to subjective policies stated by each Judge.

Results illustrate that unequal weights are assigned to justice antecedents in the formation of overall judgments, and that the presence of antecedents does not ensure their salience to an overall judgment. Furthermore, the salience of the role of justice dimensions varies between individuals. Judges are mostly consistent in making justice judgments between situations (r=0.63), but exhibit poor self-insight into their own mental processes. Comparison of objective and subjectively ranked cues was low (r=0.02), and between objectively and subjectively rated cues (r=0.26). Measures of personality and cognitive control (CRT) are included to explore decision making between individuals.

This thesis demonstrates possibilities for representative design in justice research, and illustrates how it can enhance the capabilities of policy capturing studies. Practical implications for appraisers are discussed in light of how fair performance appraisals are perceived to be.

Keywords: Organizational justice, Fairness, Representative design, Policy capturing, Process tracing, Mouselab.

Contents

List of Tables

List of Figures

List of Equations

Statement of Copyright

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Chapter 1: Introduction

1.1 Introduction

Perceptions of overall justice have been shown to impact upon the attitudes and behaviors of individuals (Greenberg, 1990b, Konovsky, 2000). In an organization this can lead to less productivity, commitment, or ultimately profits (Folger and Konovsky, 1989, Greenberg, 1990a, 1993c, Bies and Tripp, 2001, Conlon *et al.*, 2005). In order for managers to promote work environments perceived as fair by their employees, and to prevent the adverse consequences of perceived unfairness, it is essential for managers to understand how overall perceptions of fairness are formed. Managers could better influence perceptions of fairness if they understand which factors lead to a decision and which the most salient factors are for individuals, as well as recognizing how perceptions vary between individuals.

This thesis brings together the field of organizational justice, the theories of Egon Brunswik and two methodological approaches often associated with decision making research, and in combination these provide a novel approach to organizational justice research. The purpose of this research is to gain an understanding of how individuals make justice judgments, and more specifically, to identify individuals' decision making policies (relative importance of information) and processes (the procedures used to make a judgment).

1.2 Current Difficulties in Measuring Overall Justice

Given the importance of justice perceptions in the workplace it is essential that we are able to measure them in some way. Existing research has identified many of the antecedents which can lead to justice perceptions (discussed in section 2.6), and also the consequences which can result from perceptions of unfairness (considered in section 2.4 and 2.5). However, there remain gaps in current understanding of how overall justice judgments are formed and how information from different situations is processed.

When measuring perceptions of overall justice in organizations, researchers often rely on existing scales which are administered using self-report surveys. The organizational justice scale items are often of equal weight (see measures by Niehoff and Moorman (1993), Sweeney and McFarlin (1997) and Colquitt (2001), for example), but there is research to suggest that in some

situations, some factors are more important than others in forming an overall justice judgment (Kim and Leung, 2007, Ambrose and Schminke, 2009, Holtz and Harold, 2009, Jones and Martens, 2009). The field of organizational justice is lacking empirical evidence of how scale items are weighted relative to one another in the formation of an overall justice judgment.

Overall justice perceptions have been shown to drive individual behavior (Kim and Leung, 2007, Ambrose and Schminke, 2009) and whilst existing research has identified factors that may lead to fairness perceptions (antecedents) (Bies and Moag, 1986, Leventhal *et al.*, 1980), the methodological choices that are frequently made by justice researchers do not permit insight into the process of decision making. Justice research is often concerned more with the output or decision itself, rather than its creation. Furthermore, when processes are explored, using interview techniques or Likert-scale surveys for example, the researcher can only rely on that which is reported by the participant, which may be prone to distortion and inaccurate (Jacoby *et al.*, 1987, Paulhus and Vazire, 2007). The use of an objective methodology, one that does not rely on participants own (subjective) self-accounts, has largely been ignored within organizational justice research. One reason for this is that there is no external correlate of how fair something is. Unlike the field of perception for example, where distances can be measured and objectively quantified (Brunswik, 2001 [1944]), this is not possible in fairness judgments. An objective measure of justice judgments is important given the research indicating that individuals have poor insight into their own decision making policies and processes used to reach a judgment (Slovic and Lichtenstein, 1971, Nisbett and Wilson, 1977).

Organizational justice researchers often design research so as to make generalizations across groups of individuals and organizations. As seen in academic publications, researchers typically place much emphasis on sampling participants, for example to represent a select group or a cross-section of the population in order that recommendations can then be made, and even acknowledge limitations with sampling choices. However, rarely do researchers pay the same attention to the context and situations under investigation (see section 4.7).

The practical application of existing studies in organizational research has been hindered by a preference amongst researchers to conduct research in artificial environments which are closely manipulated by the researcher. Research is often conducted without due consideration for the natural environment in which people live, interact and behave, and thus lacks external validity (Greenberg, 1990b). Such an approach to research design ignores the context in which

individuals make judgments about fairness, for example, the fairness of work hours, employment conditions, promotion decisions, and acceptable behaviors. Even within one situation, such as performance appraisals, the contexts in which decisions are made are not alike and thus as researchers sample their participants, there is a call from the decision making field to concurrently sample situations (Brunswik, 2001 [1944], Dhami *et al.*, 2004). The empirical research in this thesis adheres to Brunswikian principles which emphasize the importance of dual sampling in research design. Brunswik's Lens model and his principle of representative design originated in the field of perception (Brunswik, 2001 [1944], 2001 [1955], Cooksey, 2001) but its applicability has been demonstrated in the field of judgment and decision making. The studies in this thesis adopt a representative design and in doing so demonstrate its relevance to justice research.

1.3 Overview

This thesis addresses each of the above issues through two empirical studies in which the overall justice judgment is examined. Performance appraisal experiences are used as a real world context in which individuals make fairness decisions at work, and thus the situations, stimuli and participants are all designed in order to reflect the judgment of a realistic performance appraisal. A 10 item scale is developed from Colquitt's (2001) influential justice scale, which covers the four known justice dimensions. This scale is then employed to quantify the occurrence of individual justice antecedents present in overall justice judgments. In the first study, a policy capturing methodology is used and administered using a pen-and-paper design to present information about realistic performance appraisal situations, which Judges rate according to perceptions of overall fairness. Individual decision making policies are inferred from the data and provide an insight into how available cues are used in making an overall justice judgment. In the second study, the same stimuli are used to elicit perceptions of overall justice using Mouselab, a computer process tracing tool. Both studies are designed in adherence with the Brunswikian principle of representative design.

The objectives of this research are:

1) To identify the relative importance of individual justice antecedents in determining overall feelings of justice.

2) To understand how much insight individuals have into their own decision making.
3) To ascertain whether there is social agreement between individuals in forming an overall justice judgment.

In addition, through monitoring the process of decision making (in Study 2) hypotheses are tested which correspond to the relationship between decision making processes and cue importance, and the relationship between decision making processes and cognitive control and two personality measures.

1.4 Contributions

This thesis contributes to the field of organizational justice in several ways. I demonstrate the use of two novel methodological approaches which can further understanding of the justice judgment process. I provide evidence of unequal item weights used by individuals in a popular justice scale regarding known antecedents of overall justice judgments, and in addition, explore the level of insight individuals possess into their own decision making policies. The two studies include extensive within-individual analysis for judgment making and also illustrate differences in how overall justice judgments are made between-individuals.

This research is also of value to practitioners. With an understanding of how perceptions of overall fairness are made, practitioners can increase the perceived fairness of an appraisal experience from the perspective of the employee. With an appreciation of the factors which are most (or least) salient to fairness perceptions, appraisers will be better equipped to conduct appraisals perceived as more fair.

1.5 Chapter Outline

The remainder of this thesis is structured as follows:

In chapter 2 I introduce organizational justice as an important construct for organizations and individuals. I discuss the assumptions often made by organizational justice researchers when determining perceptions of overall fairness, and proceed to show how these may not accurately represent the decision making process. In doing so the primary objective of this thesis is introduced.

In chapter 3 the revolutionary work of Egon Brunswik is described. His theories and methodological approaches to research have been shown to be useful tools for understanding the decision making process. As justice judgments represent one form of decision, Brunswik's work provides a framework for the empirical studies in this thesis.

In chapter 4 I introduce the methodological approach taken in Study 1. Policy capturing is the method used to understand how overall justice judgments are formed, and an overview of this tool is provided. A review of existing organizational justice research adopting policy capturing designs indicates the absence of research which examines the behavior of individuals in realistic and natural environments.

Chapter 5 draws on the previous three chapters to develop the first empirical study: A Policy Capturing Study in Organizational Justice. This chapter identifies the numerous methodological steps taken prior to the actual administration of the decision making task, in order to adhere to Brunswikian principles. I use a sample of 12 Judges and linear regression analysis to provide insight into the decision making policies of each Judge and the relative weights assigned to information in the formation of an overall justice judgment. I include study design, method and quantitative analysis alongside discussion of the findings and implications of the study for practice and research.

In chapter 6 I introduce process tracing as a tool used to understand how information is used in decision making and the processes used by individuals to reach an overall justice judgment. The process tracing tool used in Study 2 – Mouselab, a computerized process tracing system, is evaluated as an effective tool against other process tracing tools and is established as the chosen approach for the second study.

Chapter 7 presents the second empirical study: A Process Tracing Study in Organizational Justice. Study 2 extends the findings of Study 1 on a larger sample (N = 49) providing an analysis based on 2744 decision making situations. The process tracing methodology is described and analyses are conducted at the within-individual and between-individuals level. The information acquisition behavior of individuals is also analyzed with respect to the formation of an overall justice judgment. A discussion of findings identifies the dynamic processes used by individuals when making overall justice judgments from known antecedents.

In chapter 8 I discuss implications of the results from the two empirical studies and make recommendations for researchers in organizational justice, those who conduct policy capturing studies more widely, and practitioners. Suggestions for future research are then made.

Chapter 2: Organizational Justice

2.1 Introduction

After more than half a century of research in organizational justice there remains unanswered questions. Cropanzano *et al.* have stated that "justice is many things" moreover that "the breadth of the question renders it intractable" (2001a; 179). This chapter maps the development of organizational justice research and the methodological approaches commonly taken to study it. In doing so I present the direction of the research in this thesis, namely, how perceptions of overall justice are formed. An understanding of the formation of overall justice judgments can make valuable contributions in the field of organizational justice and to practitioners who wish to take steps to enact workplaces that are perceived as more fair.

The format of this chapter is as follows; first, this chapter introduces the concept of organizational justice and then establishes it as a subjective perception (section 2.3). Sections 2.4 and 2.5 discuss why organizational justice is important to both organizations and individuals. In section 2.6, the components of justice are introduced in the form of antecedents and dimensions. The global construct of overall justice is then discussed which presents the overriding question addressed in this thesis – how are overall justice judgments formed? Lastly, a review of the common methodological choices favored by justice researchers (section 2.8) establishes the opportunity for a methodological direction suited to gaining further insight into justice perceptions.

2.2 What is Organizational Justice?

Organizational justice concerns perceptions of fairness within the workplace (Byrne and Cropanzano, 2001). Justice perceptions can be made at an individual or collective group level, and can be based upon the action of an individual, such as a manager or colleague, or an entity, such as a department or the organization as a whole. Interest in organizational justice has increased over the last fifty years as it is found to have important consequences for organizations.

The history of organizational justice dates back to Stouffer *et al.'s* (1949) research on relative deprivation. Stouffer *et al.* showed that individual satisfaction with outcomes was not dependent on absolute levels, but rather upon comparison of those outcomes with another

(Colquitt *et al.*, 2005). However, it was Greenberg (1987) who first used the term 'organizational justice' to refer specifically to people's perceptions of fairness

More generally, justice, or rather the need for fairness, is a universal concept which is embedded within individuals. Even at an early age, despite lacking reasons for their judgments, children make justice judgments and can be found saying phrases such as "that's not fair!" (Wilson [1993], In (Ambrose, 2002; 803)). Cohen (1986) stated that "feelings of justice and injustice are experienced commonly in everyday life" (In Colquitt and Greenberg, 2003; 165), not only within organizations but in our day to day activities and interactions. However, organizational justice has been shown to matter less in some cultures than others. For example, Kim & Leung (2007) found cultural differences affect perceptions of fairness. They found perceptions of overall fairness on job satisfaction to be stronger in America than China and Japan, and that overall fairness perceptions led to higher employee turnover intentions for Americans than Chinese or Koreans.

Justice perceptions are most prominent when an individual is on the receiving end or perceives there to be injustice in the workplace. Individuals naturally prefer a positive outcome over a negative one (Lind and Tyler, 1988, Thibaut and Walker, 1975) and favorable outcomes are "more likely to engender fairness" (Cropanzano *et al.*, 2001a; 173). Perceptions of unfairness, or unfavorable outcomes, can prompt adverse attitudes and behaviors by individuals, and even after many years of research organizational justice remains a "complex, multifaceted phenomenon" (Colquitt *et al.*, 2005) affecting and being perceived by individuals to different degrees.

To understand organizational justice and what prompts feelings of justice we must first understand what it is that people perceive to be fair (Colquitt *et al.*, 2005). Within this thesis the terms justice and fairness (injustice and unfairness) will be used interchangeably.

2.3 Perceptions of Justice

In organizational justice "an act is just because someone perceives it to be just" (Fortin, 2008; 2). Justice is a belief, it is intangible, and as a perception or experience formulated by an individual, justice is a subjective concept (Lind and Tyler, 1988, Cropanzano and Greenberg, 1997). Due to its subjective nature what is deemed fair by one individual can be interpreted as unfair by another. Consequently, it can be difficult to capture and understand what prompts

perceptions of unfairness and to identify its antecedents. However, this is a necessary step in order to control these antecedents and reduce the adverse effects and consequences of injustice. Moreover, we must not only identify these antecedents but ask how they combine together in the formation of overall justice judgments.

Organizational justice research to date has largely divided into two groups; the first researching its antecedents (e.g., Colquitt *et al.*, 2001), and the second, concerned with an overall or global measure of justice (e.g., Cropanzano and Ambrose, 2001, Ambrose and Arnaud, 2005). These two areas of research are not unrelated. Overall justice may be, at least in part, explained by its antecedents, and as such an understanding of the former and its relationship to the latter can provide valuable insight into perceptions of (in)justice for both researchers and practitioners. Whilst much research has identified the relevant antecedents of justice, we do not yet know the relative importance of these antecedents within an overall justice judgment. Overall justice and its antecedents are discussed separately within this chapter, but first, why is justice important?

2.4 Why Does Justice Matter?

In 2002, Ambrose started her paper by stating that "Justice matters" (p803). This sentence, albeit short, indicates the power and importance of justice. Justice is important for both personal and organizational wellbeing.

At the individual level, individuals have been shown to be concerned with justice for three reasons; first, justice has instrumental value, second, it has relational properties (Lind and Tyler, 1988, Tyler and Lind, 1992) and third, individuals hold a moral virtue of human worth (Folger, 1998). Each of these motives will next be presented in turn.

2.4.1 The Instrumental Motive

The instrumental motive states that individuals care about justice because they are naturally motivated to seek control of their own outcomes (DeCremer and Blader, 2006; 212). Put simply, people care about past, current, and future positive outcomes and the personal control they have over those outcomes. Individuals are self-motivated and therefore demand procedures which permit the achievement of interests external to the procedural experience (Tyler and Lind, 1992). It is important for individuals to seek control in order to attain the fair outcomes they desire (*Ibid*). Such individuals accept a long-term perspective of justice, for they

are willing to overlook unfavorable outcomes now for more favorable ones in the future (Cropanzano *et al.*, 2001a).

2.4.2 The Relational Motive

The relational motive for justice (also called the group-value theory) posits that individuals care about justice as it acts as a signal of status within a group, and individual relationships with authorities (the decision makers). Individuals care about their relationships with others as it is through these relationships that they can also learn and understand themselves (Brockner and Wiesenfeld, 1996). In the relational model a fair procedure indicates "a positive, full-status relationship" (Tyler and Lind, 1992; 140) which promotes further within-group relationships. Conversely, procedures which do not promote the above are deemed unfair. When fair procedures are not followed, then this can signal to an individual that they are not respected or worthy enough to be treated fairly, which in turn can affect their standing within the group (Cropanzano *et al.*, 2001b; 91). Once individual self-esteem is hurt in this way individuals can react adversely, feeling less good about themselves, less willing to support the group and less motivated towards the organization.

2.4.3 Moral Virtue

A third explanation of why justice matters is offered by Folger (1998) in the form of moral virtues. Here, justice is important because individuals "have a basic respect for human dignity and worth" (Cropanzano *et al.*, 2001a; 174) and thus want to be seen as "virtuous actors in a just world" (Cropanzano *et al.*, 2001a; 178). Individuals care about receiving, observing and administering fairness, because is it the right thing to do.

2.5 Justice at the Organizational Level

Justice also matters at an organizational level; "one of the most important benefits of organizational justice conceptualizations is that they may be used to explain a wide variety of organizational behaviors" (Greenberg, 1990b; 415). When individuals perceive unfairness which violates their ability to reach their own outcomes or that affects their standing in their group for example, there are many ways in which they can react. Reactions of the individual to restore a

sense of fairness may ultimately result in adverse consequences for the organization, as the individual takes it into their own hands to deal with or right the injustice they perceive.

Employee perceptions of injustice can lead to behavioral and attitudinal changes (Konovsky, 2000). Employees who perceive unfair outcomes have two options available to them to restore a sense of justice. Firstly, they can reduce their levels of effort and input, and secondly, take action in order to increase their own rewards or outcomes (Adams, 1965). For example, to reduce inputs employees can reduce their levels of productivity and motivation (Conlon *et al.*, 2005) and commitment (Folger and Konovsky, 1989), and in doing so strive to maintain constant rewards in terms of outcomes, with less effort.

To compensate themselves for injustice, employees may participate in theft (Greenberg, 1990a, 1993c) or revenge seeking (Bies and Tripp, 2001), and become more likely to take part in counterproductive behavior, take sick days or ultimately quit (Conlon *et al.*, 2005), thereby taking their own 'rewards' or outcomes from their employer.

For these reasons it is important for managers and authority figures to understand what prompts unfairness perceptions and to promote fairness within the organization and workplace in order to keep adverse reactions and behaviors to a minimum. Through academic research, managers can better understand the antecedents that lead to their employees' perceptions of injustice and then take appropriate action to minimize their occurrence. Organizational justice research has classified justice antecedents according to the four broad justice dimensions which are introduced next.

2.6 Components of Justice

Organizational justice can be divided into smaller components. One approach to looking at organization justice is through its antecedents and dimensions, from which perceptions of fairness are made by an individual. It is generally acknowledged that there are four dimensions of justice, each representing "related, yet different, constructs" (Levy, 2001; 276), and as individuals are able to distinguish between the dimensions of justice, researchers should also distinguish between them (Bies, In Cropanzano *et al.*, 2001a). There is also substantial agreement regarding the antecedents each comprises.

Organizational justice has been classified into four dimensions; distributive justice (DJ), procedural justice (PJ), interpersonal justice (INPJ) and informational justice (INFJ) (Colquitt,

2001). More generally, these correspond to whether an outcome is seen as fair, whether the procedures used to reach it were fair, whether the person feels they were treated with respect, and whether or not they were properly informed about what was going on during the process.

This section introduces each dimension and its antecedents in turn. In doing so, I present an overview of how the justice models are used by researchers, that is, into how many dimensions organizational justice should be considered. It is only then that I shall introduce the concept of overall justice, which is an alternative and more recent approach to measuring organizational justice that encompasses all the antecedents of justice.

2.6.1 Distributive Justice

The first dimension is distributive justice. Distributive justice concerns the perceived fairness or favorability of outcomes. Outcome favorability within organizations is typically governed by the equity rule (Adams, 1965) which specifies that individuals compare their own ratio of inputs to outcomes against some referent other, in order to determine whether they are being favorably rewarded. An individual whose ratio of inputs to outcomes is smaller experiences relative deprivation (Adams, 1965) and thus perceives an unfair outcome. However, relative deprivation need not always result in feelings of unfairness, for example individuals may realize that individuals with higher rewards received these because they were deserved (Adams, 1965; 273). When unfairness is perceived individuals can take action to alter their own input to output ratio to restore equity; they may decrease their inputs (e.g. reduced productivity) or increase their outcomes (e.g., through theft or taking 'sick days'). More extreme methods of equity restoration include quitting the situation or organization, or changing the referent other (Adams, 1965) to whom they compare their situation.

Blau (1964) and Foa and Foa (1974) highlight that outcomes are not solely economic monetary rewards; Blau describes these as social exchanges whilst Foa and Foa talk about socioemotional outcomes (Cropanzano *et al.*, 2001b). Social exchanges are "less tangible and perhaps more symbolic resources, such as recognition or esteem" (Cropanzano *et al.*, 2001b; 45) whilst socioemotional outcomes are of symbolic value possessing "information about the worth, status, or value of a given individual" (Ibid; 50). Martin and Harder (1994) found that contribution-based rewards can be compensated through equality or needs-based distribution of socioemotional outcomes. In essence, they find socioemotional rewards, such as warmth and

friendliness, were used to act as 'top-ups' to alleviate unfairness perceptions amongst lower paid workers. The importance placed on economic or socioemotional outcomes should be assessed on an individual case by case basis, for what is fair, in terms of an outcome, can differ between individuals and change within and across situations. Furthermore, the absolute value of socioemotional outcomes is less clear and so equity rules become more difficult to determine and alternative rules of allocation may be used, such as needs based and equality allocation rules (Deutsch, 1975). The equity rule calculation of inputs to outputs also becomes difficult as individuals may differ in the importance they assign to different inputs. We may find that whilst two individuals agree on their inputs, they "may disagree as to the weight each investment should be given" (Adams, 1965; 274) and thus their absolute level of input in the equity ratio.

In attempting to classify when each distributive justice rule should be dominant, Deutsch stated that "in cooperative relations in which the fostering or maintenance of enjoyable social relations is a primary emphasis," then an equality rule should dominate, but when the relationship focuses on the "fostering of personal development and personal welfare" then the needs rule should prevail (Deutsch, 1975; 146). Each of these distributive rules can exist individually and can conflict with one another. The allocation rule is specific to the situation and the individual and thus it is not clear how, or when, the different rules should be enacted.

Whilst researchers have identified known antecedents which can lead to perceptions of distributive fairness or unfairness, we do not yet know the relative importance of each of these antecedents within the dimension. For example, Colquitt's (2001) distributive justice scale is made up of four items, which are presumed to hold equal weight. Through the adoption of new methodological choices in the field, greater insight can be gained into the relative importance of antecedents in a given organizational context.

If individuals can be dissatisfied even with perceived favorable outcomes then there must be something else that promotes such negative perceptions (Lind and Tyler, 1988; 2). Unfavorable outcomes can "elicit a greater need for explanation and thus focus people's attention more strongly on the procedures used to arrive at the outcome" (DeCremer, 2005; 5). Referent cognitions theory (RCT) is one explanation of how individuals reach a perception of justice; that outcomes are unfair because they were reached using unfair procedures (Brockner and Wiesenfeld, 1996; 192), and it is the procedures which provide information on who is responsible and who is to blame (Folger, 1998). Here, the individual believes that had the proper

procedures been followed (*should*) then this *would* have resulted in a more favorable outcome (Cropanzano *et al.*, 2001a). RCT has since been superseded by Folger's fairness theory that includes *could*, in addition to *would* and *should*, in asking "*could* the decision maker have acted differently?". We now turn our attention to the process by which outcomes are allocated.

2.6.2 Procedural Justice

The second justice dimension, procedural justice, concerns the perceived fairness of the decision making process. According to the fair process effect, if the process is perceived as fair then so too may be the outcome (decision), even if on its own it does not appear favorable (Leventhal, 1980; 35). Interaction effects are found to exist between the distributive and procedural justice dimensions. Reactions to unfair procedures can depend upon the degree of outcome favorability, whilst perceptions of outcome fairness can depend upon levels of procedural fairness (Brockner and Wiesenfeld, 1996). Therefore, the enacting of fair procedures can help minimise the adverse affects of perceived outcome unfairness. Interestingly, Van den Bos *et al.* (1999) have shown that there may be instances when unfair procedures will be welcomed. If unfavorable outcomes can be attributed to the use of unfair procedures then blame may be externalized, causing negative behaviors to be less strong than had unfavorable outcomes been distributed via fair processes. Nonetheless, procedures have a lasting quality that is not held by outcomes, and thus perceptions of a fair work environment will be more positive if employees perceive that the procedures are consistently followed over time (Tyler and Lind, 1992; 135). What is certain is that when both outcomes and procedures are perceived as unfair the most negative reactions occur (Brockner and Wiesenfeld, 1996). Konovsky states that we should no longer be asking whether distributive or procedural justice is more important, but rather "what are the conditions under which PJ takes precedence over other justice types?" (Konovsky, 2000; 503). The methodological approaches adopted in this thesis permit insight into the relative importance of the individual justice dimensions in reaching an overall assessment of justice.

Procedural justice concerns the process and decision control that is input into decisions (Thibaut and Walker, 1975). Process control being "how much people are allowed to present evidence on their behalf before the decision is made", and decision control, "whether individuals have any say in the actual rendering of the decision" (Brockner and Wiesenfeld, 1996; 189). Blader and Tyler (2003) on the other hand, conceive procedural justice as deriving from two

sources; formal and informal. In the former, procedures are guided by organizational procedures and rules, whilst informal sources are typically the procedures followed by an individual manager. Most research measures only the formal sources of procedural justice, but individuals have been shown to make distinctions between the two (Blader and Tyler, 2003).

Leventhal , Karuza and Fry (1980), proposed six rules (or antecedents) which should be met for a procedure to be considered fair; consistency across people and over time, no bias against or for any specific group, accuracy (relying on good information), mechanisms for correcting wrong decisions (correctability), adherence to prevalent conceptions of morality, and "representativeness", i.e., taking into account opinions of all groups affected. We do not know if the presentation of one or a few attributes has as much impact as a set, and if some attributes of fair procedures are more important to fairness judgments than others (Ambrose and Kulik, 2001). Leventhal assumes that individuals apply some form of weighting to these rules, but is not specific, saying that "the relative weight of procedural rules may differ from one situation to the next, and one procedural component to the next" (1980; 46). Leventhal further asserts that individuals are likely to "assign higher weight to procedural rules that favor their own interests" (1980; 46). Whilst some weighting of procedural antecedents is therefore anticipated we do not yet know how they contribute to an overall justice perception. This thesis offers an insight into the role of distributive and procedural justice in decision making within a specific context.

Following the two-factor model which includes the distributive and procedural dimensions, the introduction of interactional justice (IJ) (comprising of interpersonal and informational justice) led to a three-factor model of justice. Most recently, researchers have argued for a four-factor model of justice in which interactional justice is separated into interpersonal and informational dimensions of justice (see below).

2.6.3 Interactional Justice

Whilst some researchers have treated interactional justice as a subset of procedural justice (Tyler and Bies, 1990), more recently they have been shown to be independent constructs (Skarlicki and Folger, 1997, Cohen-Charash and Spector, 2001, Colquitt *et al.*, 2001, Cropanzano *et al.*, 2001a).

Interactional justice recognized that "people are sensitive to the quality of interpersonal treatment they receive during the enactment of organizational procedures" (Bies and Moag,

1986; 44). Bies & Moag conducted two studies interviewing Master of Business Administration (MBA) job candidates about their job search and identified four criteria for fair job recruitment procedures; truthfulness, respect, propriety of questions and justification. Bies and Moag (1986) and Bies (1987, Bies, 2001) did not claim to propose a complete set of interactional antecedents, but these criteria have since been widely adopted as the antecedents of interactional justice.

Colquitt argues that combining procedural and interactional dimensions inhibits the observation of important differences between them (Colquitt, 2001; 377). Cropanzano et al (2001a) in their review of the justice field present three forms of evidence in support of treating procedural and interactional justice as separate constructs. First, they find support that the two dimensions load on different factors, even if they are correlated. Second, they provide evidence to show that the two dimensions interact. For example, Skarlicki & Folger's (1997) study on the relationship between organizational justice and organizational retaliation behavior (ORB) used a three-factor justice model, and so was able to test the relationship between interactional justice and ORB separately from DJ and PJ. Their findings suggest that procedural and interactional justice "are capable of functioning as substitutes for each other" (Skarlicki and Folger, 1997; 438-9). The final reason offered by Cropanzano *et al.* for differentiating between PJ and IJ is that procedural and interactional justices make "unique contributions to predicting various criterion variables" (Ibid; 183).

Bies (2001, 2005) states that interactional and procedural concerns are independent, and in addition, that individuals make justice perceptions not solely on distributive and procedural terms. Interactional justice is distinct from procedural justice, in that the focus of procedural justice is on the fairness of the organization, whilst interactional justice is concerned with interactions and the relationship between the individual and their supervisor, or the decision maker (Bies and Moag, 1986; 52, Colquitt, 2001, Cropanzano et al., 2001a).

Researchers who advocate a four-factor model of justice view interactional justice as independent from procedural justice, and split interactional justice into interpersonal and informational dimensions; the first regarding quality of treatment and the second concerning information provision and explanations.

2.6.4 Interpersonal Justice

When qualitatively coding the fairness of events, Messick *et al.* (1985) and Mikula *et al.* (1990) reported unfairness of interpersonal interactions as a salient area of injustice. Interpersonal justice demands that rules are enacted with dignity and respect and in a polite manner. Fair justice perceptions have been shown to increase in the presence of honesty, respect and politeness (Colquitt *et al.*, 2005). On the other hand, interpersonal injustice can include, on the part of the decision maker, deception, invasion of privacy, disrespect, rudeness and public criticism, and insults (Bies, 2001). These items have since become the antecedents of interpersonal justice, as used by Colquitt (2001) who identified interpersonal justice as the extent to which an authority figure treats his subordinate in a polite manner, with dignity and respect, whilst refraining from improper remarks or comments.

2.6.5 Informational Justice

The upholding of thorough and clear explanations communicated in a timely manner introduces the final justice dimension, informational justice (Colquitt, 2001). Explanations can take various forms and can be altruistic, selfish and external. That is, they can be purposeful for good or bad, or unintentional due to factors outside the explanation giver's control (Shapiro, 1991; 616), and can be in the form of excuses, justifications or apologies (Bobocel and Zdaniuk, 2005). When adequate and sincere explanations are given then "recipients react more favorably toward the event, the account giver, and the institution in which the event occurs, than when such events are not explained or are perceived as being inadequately explained" (Bobocel and Zdaniuk, 2005; 477). Moreover, a bad explanation can be considered worse than no explanation (Shaw *et al.*, 2003; 451). "Ultimately, explanations influence how receivers respond to the event" (Bobocel and Zdaniuk, 2005; 471) and employees have little control on outcome decisions or the procedures used to reach those decisions. As such they often place great importance in the level and quality of the explanations they are given. This was highlighted in Greenberg's (1990a) study, which showed that theft levels were reduced amongst employees at a non-unionized manufacturing plant through the use of thorough and sensitive explanations regarding pay reductions. In this study, an adequate explanation was differentiated from an inadequate one in terms of who was delivering the information, the length of explanation,

presence of an apology and remorse shown by company managers, and explanation and justification for why a pay-cut was necessary and how long it would be in place.

Fair interactional treatment is likely to take different forms in different types of social interactions and organizational contexts. By assessing the relative importance of interactional antecedents it is possible to further test the relevance of Bies & Moag's original criteria of fair treatment which they derived in a job search context. It is also possible to identify the salience of individual antecedents in different contexts and determine whether the relative weights assigned by individuals to interactional and interpersonal justice cues differ.

Differentiation of the interpersonal and informational dimensions (which are grouped together in a three-factor justice model) has received mixed support from researchers. Yet, empirical research has shown the interpersonal and informational dimensions to be separate constructs. Greenberg (1993b) classified justice as a 2 x 2 taxonomy (PJ & DJ, Structural & Social) defining interpersonal justice as the social side of distributive justice and informational justice as the social side of procedural justice. He showed high levels of both social DJ (interpersonal) and social PJ (informational), separately or together, are "effective in mitigating the undesirable behavioral and attitudinal reactions to negative outcomes" (Greenberg, 1993b; 82). In their study on the adequacy of explanations, Shapiro *et al.* (1994) distinguished between information sincerity and information specificity. They found both to influence perceived adequacy of explanation, but that it is more greatly affected by information specificity. Shapiro *et al.* show sincerity (interpersonal treatment) and specificity (information) to have independent effects upon perceptions. Greenberg's (1993c) study on theft reactions to underpayment inequity showed individuals to be able to distinguish between the two types of interactional justice; interpersonal and informational justice. His study untangled interactional justice by separately controlling for information validity and information sensitivity, and found them to work both independently and together to "facilitate acceptance of inequities" (Ibid; 98) in this case underpayment. Additionally he showed information validity and sensitivity independently reduced theft behavior.

2.6.6 Précis of the Justice Components

There remains much debate amongst researchers into how the dimensions of organizational justice should be grouped. Indeed, Cropanzano and Ambrose concluded that

"justice is a complicated social phenomenon. There is more than one way to look at it" (2001; 143). To date, organizational justice is largely classified according to the four dimensions discussed above. Colquitt, in his seminal 2001 paper, showed a four dimensional model of justice to be significantly better than a three factor model (distributive, procedural and interactional), and a two- and one- factor model, because their confidence levels did not overlap (Colquitt, 2001).

This paper seeks to identify the relative importance of individual justice antecedents and does so by adopting the four-dimensional model of justice. More specifically, the four-dimensions, and antecedents from each, are used to determine their individual contribution to an overall measure of justice.

2.7 Overall Justice

An overall perception of fairness is an individual's global evaluation of fairness towards an organization, entity, or experience as a whole (Cropanzano and Greenberg, 1997, Kim and Leung, 2007, Ambrose and Schminke, 2009, Holtz and Harold, 2009). In this section, studies are presented which have shown overall justice to be a mediator, to be affected by individual and cultural differences, and to be influenced by justice dimensions. However, an understanding of the relationship between justice antecedents and an overall judgment are unclear. A discussion of how overall justice judgments are typically formed by researchers then follows, and in doing so the main contribution of this thesis is identified.

Existing research has identified the importance of understanding overall justice (Cropanzano and Ambrose, 2001, Ambrose and Arnaud, 2005) and whilst advocates of research on overall or global justice share the implicit or explicit assumption that the justice dimensions predict global justice, results have been inconsistent (Holtz and Harold, 2009).

Fassina *et al.* (2008) found that the predictive strength of measuring overall justice directly was greater than for the individual justice dimensions. Further, when organizational justice is used to predict outcomes and behaviors, an overall measure of justice is more suitable to investigate global predictors and global outcomes. That is, the level of justice specificity used should match the outcomes of interest (Edwards, 2001, Colquitt and Shaw, 2005, Ambrose and Schminke, 2009, Holtz and Harold, 2009). An understanding of the overall justice construct, its

components and formation is essential for researchers to understand employee reactions such as job-satisfaction, organizational commitment or turnover intentions.

In a cross-cultural study of the formation of and reactions to overall fairness perceptions, Kim and Leung (2007) showed that the salience of individual justice dimensions to an overall justice perception varied across cultures. For example, salience of distributive justice on overall fairness perceptions was significantly stronger for Chinese than American and Japanese participants. In addition, they showed that reactions to injustice also differed. For example, overall fairness judgments were more likely to result in turnover intentions for Americans then the Japanese, but least so for Koreans. Kim and Leung show that cultural identity and values seem to influence how justice facets are used to form an overall justice perception. However by looking at cultural differences and explanations such as materialism and power distance within cultures, they do not consider differences that may exist at an individual level.

In two studies, Ambrose and Schminke found that "overall justice judgments mediate the relationship between specific justice judgments and outcomes" (2009; 497) which affirms the importance of knowing how overall justice judgments are formed in order to understand employee reactions. Using a three-factor model of justice, their first study found all three components to be significant predictors of an overall justice judgment, whilst in their second study only procedural and interactional justice were significant predictors. They also found that overall justice judgments fully mediate the effect of facets on broad employee attitudes (job satisfaction, commitment, and turnover intentions) and behaviors (supervisor's evaluations of organizational citizenship behavior, task performance, and deviance).

Jones and Martens (2009) found some dimensions of justice to be more salient than others in the perception of overall justice. More specifically they showed overall justice to be a distinct construct from the four justice dimensions. In addition, they showed that the distributive and interpersonal justice dimensions "accounted for the most unique variance in overall fairness" (Ibid; 1044), but assert that this relationship may be context specific. Jones and Martens find that overall justice mediates the perception of individual justice types (dimensions) and consequential behaviors and responses, for example, it fully mediated between distributive justice and affective commitment. Support for overall justice as a mediator highlights the need to better understand how an overall justice perception is formed from the individual justice dimensions.

Holtz and Harold's study found that regardless of trust, "organizational-focused procedural justice was the strongest predictor of initial overall organizational justice perceptions" (2009; 1195), whilst supervisory justice perceptions were most strongly predicted by informational and interpersonal justice. Further, the perception of interpersonal justice may taint perceptions of overall justice at a supervisory and organizational level, as employees may view their supervisors as organizational representatives (Holtz and Harold, 2009).

Recent interest in the relationship between the dimensions of justice and perceptions of overall justice is inconclusive as to which dimensions of justice have the strongest influence, and how the justice dimensions influence overall justice perceptions. There are no studies that allow a fine-grained analysis of the link between specific antecedents, such as equity, voice and accuracy, and overall justice. Therefore we do not know what the relative weight of these antecedents are, and whether different individuals give similar relative weights to each antecedent.

Despite calls for research using a combination of antecedents and overall measures, our knowledge of the nature of the link between justice antecedents and overall justice is still rather limited (Holtz and Harold, 2009). When measuring or manipulating an overall perception of organizational justice using individual antecedents researchers often make two assumptions, as shown in figure 2.1. First, that each dimension of justice is the sum of a known set of antecedents, and second, that an overall justice judgment is the sum of its dimensions (be this a 2-, 3- or 4- factor justice model).

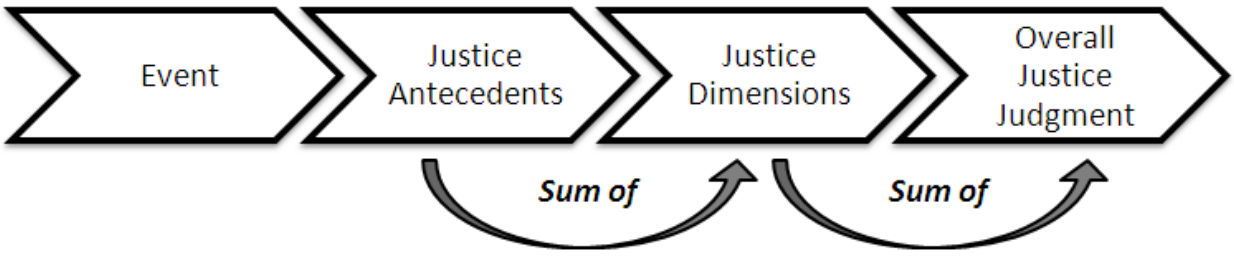

Figure 2.1: Leaps of justice

There are several issues with making these leaps. First, the focus on individual justice dimensions and specific justice antecedents may not capture the depth of the experience of

injustice (Ambrose and Schminke, 2009). The antecedents and dimensions of justice "may not provide either a complete or an accurate picture of how individuals make and use justice judgments" (Ibid; 492). Not only does this not take into account antecedents which may be important to an individual but are not captured on a recognized scale, but also it does not account for the weights individuals may assign to each antecedent; weights which may be different across individuals and contexts. For example, if Colquitt's (2001) justice scale is used, it may be assumed that an evaluation of interpersonal justice can be measured by summing the responses to; "Has he (your supervisor) treated you in a polite manner?", "Has he treated you with dignity?", "Has he treated you with respect", and "Has he refrained from improper remarks or comments?". Such an approach would then aggregate the items to form an overall measure of interpersonal justice, a process which typically allocates equal weights (Edwards, 2001) to all four antecedents and thus does not allow for individual differences in the importance of individual antecedents, or that the relationship between antecedents and overall justice may vary as a function of the salience and relevance of the specific justice type. Fassina *et al.* (2008) propose that when survey space is limited it is useful to operationalize overall justice through its dimensions, rather than including a separate measure of overall justice. Problems may arise however in that the dimensions measured may not best represent an overall fairness perception in a given context and each will most likely be assigned equal weights. An overall justice measure on the other hand need not be context specific (Fassina *et al.*, 2008) and is thus more comparable across studies (Holtz and Harold, 2009). The field of organizational justice lacks a comprehensive and systematic understanding of the relative weighting of antecedents in forming global justice judgments. Researchers have not yet identified what combination of antecedents and which dimensions of justice are best at predicting an overall justice judgment in a given situation, nor their relative weights.

Second, people may actually make holistic judgments when they form impressions of justice (Greenberg, 2001) and therefore do not differentiate between the individual justice dimensions, rather they view justice as a single factor (Colquitt, 2001, Cropanzano and Ambrose, 2001). Shapiro (2001) makes the argument that when faced with injustice, individuals do not ask themselves questions such as 'how many types of injustice am I experiencing?' and 'how are these linked?'; rather they are forming a general impression or perception about the experience or situation. An overall measure of justice may be more parsimonious with how individuals actually

experience and perceive fairness (Holtz and Harold, 2009) and so provide a more accurate measure of the underlying construct (Ambrose and Schminke, 2009). Cropanzano and Ambrose have argued that individuals may not differentiate between distributive and procedural justice, but that they could interact to predict an overall justice reaction. This was termed as a monistic view of justice, arguing that "procedures and outcomes do not always operate independently. Instead, the two may interact to predict individual reactions" (2001; 131). Whilst not advocating a one-dimensional model of justice, their concern was that in some instances, and for certain individuals, processes can be judged as whether they enable favorable outcomes to be obtained holistically.

A third problem with the leaps of justice shown in figure 2.1 is that, even if people can differentiate between the dimensions of justice, it may still be the overall sense of fairness that drives their behavior (Lind, 2001b). Holtz and Harold state that "the pattern and strength of the relationships between specific dimensions and overall justice is, as of yet, unclear" (2009; 1188). However, if individuals are shown to react in response to overall perceptions of justice, then it is essential that overall justice is measured in order to understand how and why individuals form justice judgments (Ambrose and Schminke, 2009). Furthermore, we do not know how stable the relationship between antecedents of justice and global justice judgments is. For instance, if someone is particularly aggrieved by rudeness in one situation, will they be similarly aggrieved in another? Are overall justice judgments stable between individuals and situations? Knowing this is important for theoretical and practical reasons. If justice perceptions are so important it is essential to know what drives them.

Research has shown that all of the justice dimensions can contribute to an overall fairness judgment made by an individual (Lind [2001], In Ambrose and Arnaud, 2005) and that it is the overall judgment that guides behavior and attitudes. However, the issue is that we do not yet know how these individual dimensions of justice, and their relative antecedents, combine to form a perception of overall justice, or how this process may differ between individuals. In the following section the common methodological approaches taken by justice researchers are reviewed and critiqued, in light of their appropriateness for exploring how individuals make overall justice judgments.

2.8 Justice Methodologies

When conducting research there are several methodological approaches that can be chosen. In this section attention is turned to the four popular choices; interviews, experiments, self-report surveys and direct observation, and each is critiqued in relation to its ability to identify and measure the salience of individual antecedents and capture perceptions of overall justice. The methodology adopted in this thesis is then briefly introduced (explained in more detail in chapter 4).

2.8.1 Interviews

Early researchers of the antecedents of organizational justice based their theory on the results of semi-structured interviews in which respondents estimated the fairness of an event and then gave reasons for their judgments. Bies (1986), for example, found that MBA students mentioned factors like honesty, courtesy, timely feedback, and respect for rights as antecedents of fair recruitment. It was using this technique that the dimension of interactional justice was coined (Bies and Moag, 1986).

Although, as in the example above, semi-structured interviews, in common with other qualitative methods, are a great way to generate hypotheses, they are less reliable when it comes to confirming those hypotheses. Interview data tends to represent people's personal theories about what is going on, rather than directly reflecting the processes themselves, and thus their credibility to reflect reality is questionable (Paulhus and Vazire, 2007). Hollensbe *et al.* (2008) used a qualitative longitudinal methodology in their study of the rules individuals used to form justice judgments of entities. They conducted two interviews with each participant. Interview one took place when participants had just started a new job, asking amongst other things about their expectations of fairness. In a second interview (three to five months into their job) they followed-up Study 1 by asking about specific fair and unfair events that had occurred at their new workplace and their fairness ratings of the organization as a whole and of their supervisor. This method enabled the researchers to gain an insight into, and compare, personal expectations and experiences. Hollensbe *et al.* (2008) found that individuals do not just sum their cumulative experiences when making an overall judgment about an entity, but that they consider a range of factors, including their own affective state and their general attitude towards the source of injustice (i.e., organization or supervisor).

During interviews participants are often asked to estimate the fairness of an event and then provide reasons for their judgments, but this can lead to several problems when interpreting data. For example, the respondents may weigh the proposed antecedents differently than they say, may not draw on all the antecedents they describe, or draw on those they do not describe. Moreover, they may not have the vocabulary available to describe all the factors that led to their judgment, nor the relationships between them. There is no comprehensive research to date that investigates how far the justice judgment theories that respondents provide really correspond to how they make overall justice judgments.

2.8.2 Experiments

One alternative to interviews is the experiment, and experiments have been widely used to study justice antecedents. Experiments allow for the precise testing of causal claims (Berkowitz and Donnerstein, 1982) and play a crucial role in theory development and testing (Van den Bos, 2001) because the researcher can manipulate the information the participant receives. That is, the researcher has control over the "manipulation and measurement of variables and over the context within which a phenomenon occurs" (Lind and Tyler, 1988; 42). Experiments can be used to test whether the predictions of specific theories hold, or they can be used to investigate particularly rare and even unlikely situations (Mook, 1983, Hammond, 1998a). Lind and Tyler argue that laboratory experiments are "most effective when the goal of the research is to test theories in a deductive fashion or to study situations that rarely or never arise in natural situations" (1988; 43). In the laboratory, researchers deliberately (and correctly) attempt to increase the power of their tests by selecting treatment conditions expected to be as powerful as possible. The range of these conditions will often be greater than those routinely encountered in the real world, thus drawing attention to the artificial environment of experimental research (see chapter 3).

Of course, when it is not the intention of the researcher to generalize beyond laboratory conditions then this need not be a limitation of this method. Researchers of this school argue "that it is the theory, not specific findings, that is generalized and applied across a variety of settings" (Lind and Tyler, 1988; 44). Greenberg in his review of the current state of the justice field encourages the use of laboratory experiments in order to gain insight into the "underlying psychological processes that are difficult to examine in naturalistic field settings" (1993a; 139).

Yet whilst experiments allow us to establish whether a pre-specified antecedent (one discovered or at least hypothesized prior to the experiment) has any effect on a justice judgment, it is only with difficulty that the relative importance of numerous antecedents can be assessed. Moreover, if it is possible to identify the contributors to a justice judgment, it is only established within specific experimental contexts, which is perhaps the biggest shortcoming of experimental studies (Blumberg *et al.*, 2005; 308). The advantage of close control and manipulation is beneficial on the one hand for internal validity, but not for the generalizability of results beyond experimental conditions. Therefore, a significant shortcoming of the experiment is that they do not provide a complete picture of the phenomena under consideration, as it happens in the real world.

2.8.3 Self-Report Surveys

A third type of research on antecedents of justice uses structured self-report or survey methods. One example is Ambrose, Hess and Ganesan's (2007) study of the link between the perceived justice of events and the perceived justice of an overall system or organization. Such studies use cross-sectional questionnaire designs, and conduct between-individual analyses. There is scope for extending this type of research by including more antecedents, and through capturing the relative impact of these in different situations. Colquitt and Shaw pointed out that it is rare for researchers to "examine fairness across multiple decision-making events" (2005; 119).

Through this method it is possible to ask individuals to identify the importance of different antecedents and attributes of their justice judgment (as with semi-structured interviews), however the researcher is left to assume that the individual is recalling the truth and has a reliable or scientific reason for what they report. The problem with self-report methodologies is that their data may be prone to "distortion, rationalization, social desirability response sets, and forgetting" by participants (Jacoby *et al.*, 1987; 148). In addition, individuals are often only asked to recall and give information regarding one event or situation, and therefore the researcher is unable to attain whether this individual's policy for decision making is stable, or in fact, whether it differs within-individual across situations. A further limitation of this choice of methodology is that it is unable to provide any insight into the process used to reach a decision or judgment, and when this is done it is through subjective assessment. Self-report methodologies provide no objective information on the sequential manner in which information is processed in decision making (Jacoby *et al.*, 1987).

2.8.4 Direct Observation

A further methodology used by researchers is direct observation, yet in organizational justice this choice is rare. Whilst this method can record actual behaviors that a participant might not admit to, and can take place in a more natural environment than a laboratory, the participant may still alter their behavior to be perceived more favorably to the researcher. Participants may demonstrate evaluation apprehension (Berkowitz and Donnerstein, 1982; 251) as shown through the Hawthorn experiment which demonstrated changes in behavior and increased interest in work when employees/participants were shown attention by the researchers (Mayo, 2003). By their nature, observations can only capture the consequences of perceived injustice rather than the underlying cause of this reaction. As such observations are of little value for researchers who wish to gain an insight into the relative importance of individual antecedents of a judgment.

2.8.5 Précis of Methodologies

This overview of the methodologies largely adopted by justice researchers has not yet identified a methodological choice that would be ideally suited to the exploration of the relative importance of individual justice antecedents in the formation of an overall justice judgment. As shown by Hollensbe *et al.* (2008) the use of interviews would permit some comparison of personal experiences but would not show their relative importance, and would provide only a subjective assessment of the relevant antecedents. Experiments would better lend themselves to the objective but are criticized for their lack of external validity and are often context specific and so would not provide insight into how within-individual judgments varied across situations. A questionnaire survey design could collect recall of individual experiences but would not be able to establish the consistency of justice judgments across situations. Whilst observation techniques are not appropriate for the level of insight required to determine the antecedents which lead to an overall judgment or reaction.

2.9 An Alternative Methodology

A methodological solution can be found in the form of policy capturing whose benefits have yet to be embraced by the justice field. Policy capturing, which is introduced and discussed in detail in chapter 4, permits insight into the formation of overall justice judgments through the relative weighting of antecedents, and uses multiple situations which can be used to measure

within-individual consistency in judgment making. A policy capturing methodology is adopted in both empirical studies in this thesis.

One problem with organizational justice research identified by Greenberg (1990b) is its preoccupation with single situations and stimuli. Additionally, Greenberg argued that the limitations of procedural justice research are "(a) focusing on undesirable events, (b) occurring outside organizations, and (c) using ad hoc measures of perceived fairness" (1990b; 420), all of which impact on the ability to generalize results and to truly capture how justice judgments are formed in the real world. In combination, Brunswik's theory of representative design (chapter 3) and a policy capturing methodology (chapter 4) can be used to further our knowledge of how overall justice judgments are formed from their antecedents, and do so whilst increasing internal and external validity through the use of naturally occurring situations.

In the subsequent chapters I first devote a chapter to Brunswik and his theories, including representative design (chapter 3), and then a further chapter to the policy capturing methodology adopted in this thesis (chapter 4).

Chapter 3: Brunswik and Representative Design

3.1 Introduction

The previous chapter identified a gap in the understanding of organizational justice; how individuals use justice antecedents in the formation of overall justice judgments. In attempting to understand justice judgments and provide an insight into the decision making processes used by individuals, the chosen research design should aim to emulate decision making in the real world. A largely unacknowledged approach to research is that of representative design, pioneered by Egon Brunswik.

This chapter will consider Brunswik's contributions to research and how they can be applied to organizational justice research. Brunswik's lens model, illustrative of decision making, is described and explained in section 3.3. It is then situated as a framework for understanding judgments when there is no distal variable, or true state to compare to the judgment. In section 3.4 the principle of representative design is introduced, and the need for two dimensional sampling is discussed in sections 3.6 and 3.7. The benefits to researchers of adopting a representative design are followed by a critique of this approach. The potential for representative design in organizational justice research is reviewed in section 3.11, and the conclusion points to the methodological choice adopted by the empirical studies in this thesis. Firstly, I present a brief introduction to Egon Brunswik himself.

3.2 Egon Brunswik

Egon Brunswik (1903-1955), dissatisfied with existing methods of research, sought to change the conduct of research and the approach taken by researchers towards study design. During his lifetime, his concepts, models and theories received little agreement or praise, and his work was largely ignored (Hammond, 1998b, Cooksey, 2001, Hammond, 2001a, Dhami et al., 2004) as his demands could be deemed insulting to many researchers of the time (Hammond, 1998b). Brunswik's expectation of researchers was ambitious (Dhami *et al.*, 2004; 960), he was suggesting revolutionary concepts that would challenge existing practices and "the conventional beliefs at the time" (Hammond, 1996; 239). Since that time, he has however, acquired numerous followers and his work has filtered into a variety of decision making fields since his original work in the field of perception. Most notably, Brunswik's theories have been adopted by

researchers of human judgment and decision making, thanks to Kenneth Hammond (1955, 2001c) who showed Brunswik's theories; the lens model, representative design, and idiographic analysis, (discussed within this chapter), to be valuable tools in clinical decision making (Cooksey, 2001, Dhami *et al.*, 2004). These three concepts represent Brunswik's visions for, and contributions to, research in the form of "an inseparable conceptual "triplet"" (Cooksey, 2001). His innovative methodological designs led Dhami *et al.* to claim he "was to become one of the most outstanding and creative psychologists of the 20th Century" (2004; 959).

Essentially Brunswik's contributions grew from a concern for the overly simplistic psychological research of the time, and a vision for research to replicate the relationship between the environment and how organisms operate with their environment, which he demonstrated through his lens model (figure 3.1). Importantly, he stated the importance of ecological validity, that is, the extent to which the cues (stimuli) used by researchers are representative of their environment. Brunswik advocated that researchers should adopt a representative design in order to increase the ecological validity of experiments and to permit the generalization of results outside of experimental conditions.

3.3 The Lens Model

Brunswik's lens model which originated in the field of perception has been adopted by decision makers and social judgment theorists to represent the decision making process, and is a perspective for understanding human judgment and decision making (Cooksey, 1996b). Brunswik's lens model represents the relationship between the environment (ecology) and the behavior of organisms that exist in that environment, or more specifically in decision making to the relationship between "the environment or ecology and the cognitive processes of a judge" (Cooksey, 1996b). An ecology being defined as "the natural-cultural habitat of an individual or group" (Brunswik, 2001 [1955]; 140). The lens model illustrates that individuals live in complicated environments and thus there is a need to filter information (or cues) to make a judgment about a situation, hence, the depiction of decision making through a 'lens'. This model is applicable to any situation in which a "judgment or decision is based upon evaluating or processing a set of cues (stimuli)" (Castellan, 1973; 88).

Brunswik's lens model is a pictorial representation of the decision making process and can be used to assess the validity of judgments (figure 3.1). Here, judgments should be made

based on cues (available information used by a decision maker to make their judgment) which reflect the natural environment in which such decisions would naturally be made by individuals. The lens model "embodied a symmetric focus on organism and environment" (Cooksey, 2001; 232) with the left hand side of figure 3.1 representing the environment, or ecology, or the true natural environment in which an individual survives (Brunswik, 2001 [1955]), and the right hand side representing the cognitive processes and cue utilizations that lead to a judgment (a focus on the organism itself). When there is an observable and measurable distal variable (an objective situation which can be compared), achievement (figure 3.1, point 7) of an individual can be measured as the correlation between judgment (point 4) and distal variable (point 1); a relationship that should be measured using a representative design (Read, 2005).

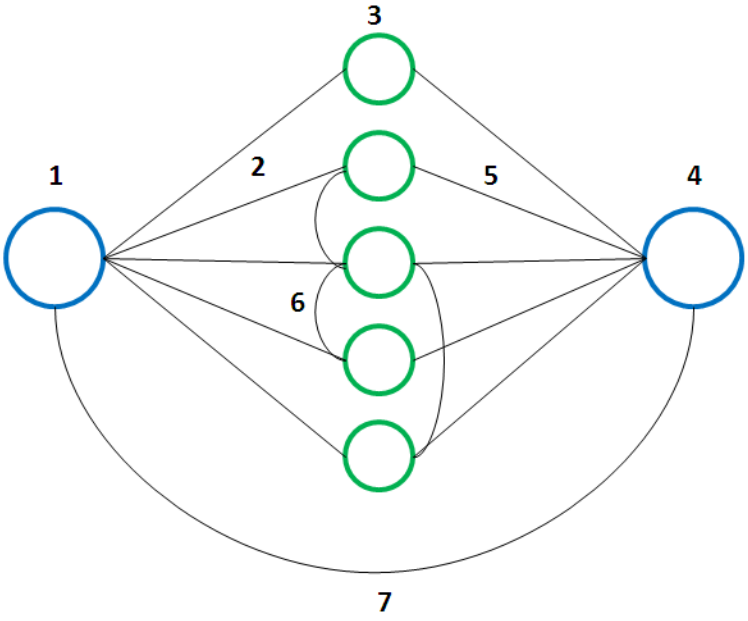

Figure 3.1: Traditional Lens Model (Adapted from Hammond (1998c) and Cooksey (1996b)).

Justice judgments differ from those in perception or likelihood as these decisions have an external correlate that is objectively measurable (Hammond and Stewart, 2001b). For example, in Brunswik's study of size perception (2001 [1944]), Brunswik's external correlate or distal variable was the actual measurable size or height of the object/building (see section 3.8). In contrast, when an individual is asked to decide for example, if it is fair that they didn't get a promotion, there is no objective state to which their response can be compared; there is no true state of fairness. As such, one limitation of the lens model's application to decision making in organizational justice is that, as there is no external correlate, there is no objective measure of a just or unjust situation. Rather, justice judgments are perceived as fair or unfair based on the interpretation of a situation from available cues and are made in specific circumstances, based on perceptions of the world that are themselves inter-correlated with other visible information or with other features of the world that are affecting them.

Despite the absence of an objective state of justice, Brunswik's lens model is useful, for it reflects the nature of decision making and is particularly relevant in organizational justice research where fairness decisions are made based on information about an event, situation or entity. Decision making is a process whereby an individual combines, weighs and abandons information in order to reach a judgment, for example, an employee assessing whether a colleague's promotion at work was fair.

When there is no directly observable correlate, such as in organizational justice judgments, a single-system lens (figure 3.2) can be used to capture judgment policies of individuals. A single-system lens model "assumes that there is no viable, unequivocal, or justifiable criterion to verify the judgment" (Athanasou, 1998; 224), and so judgments are made based solely on cue configurations and not comparable to an objective state. Here, the "set of cues act as the lens through which one perceives the world" (Athanasou and Aiyewalehinmi, 2007; 49). Individuals combine different cues when making a judgment, with cue utilization being "the correlation between cue and inference" (Hursch *et al.*, 1964). When the judgment process is repeated multiple times using different cue combinations it is possible to then statistically infer an individual's decision making policy, in terms of the cues that were important in reaching a decision. This technique is called policy capturing (chapter 4). The environment, or ecology, in which individuals make decisions, is uncertain. There exists probabilistic association between the individual cues and "there exists no one certain criterion one can use to appraise the

accuracy of social judgment. Instead, there exist only many different criteria, each of which is extremely uncertain" (Funder, 2001; 367), and which form an individual's unique judgment policy.

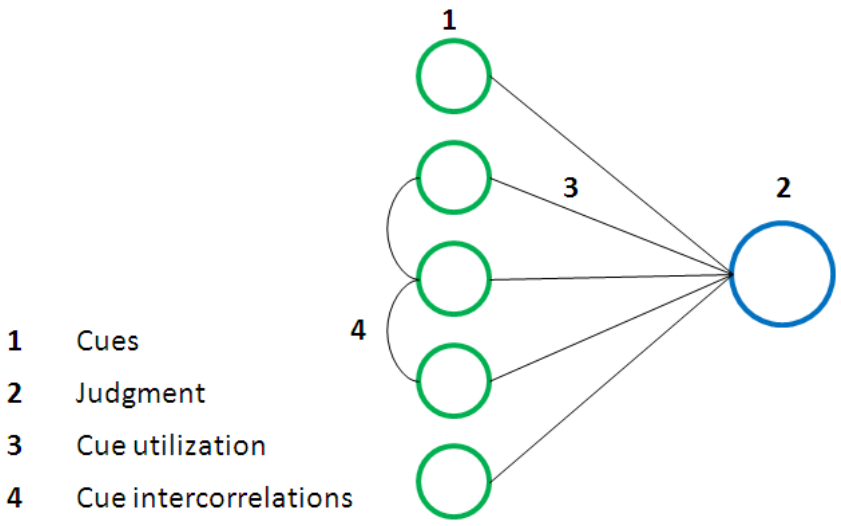

Figure 3.2: Single-System Lens Model (Adapted from Cooksey (1996b)).

In a single-system lens model ecological validity is missing, and without an objective external correlate it becomes more difficult for researchers to declare external validity. External validity is "the extent to which proximal cues are valid reflections of the distal trait" (Albright and Malloy, 2001; 329), and is a call for research to be conducted without the restricted conditions of artificial or systematic research (Hammond, 2001a). Research that has high external validity does not denote that it should be generalizable per se, but, that it uses "more realistic representations of the environment that their subjects live in" (Brunswik, 2001 [1944]), or is a more accurate portrayal of the real world.

In a single-system lens model when there is no external correlate, one way to achieve ecological validity (figure 3.3. point 2) between cues and the distal variable is to use real experiences and accounts of individuals. An illustration of such a lens model is shown in figure 3.3 below. Here the left side of the lens model illustrates first-party experiences, that is, the cue configurations are based on actual experiences of a situation which becomes the distal variable, and the right hand-side is the process of cue utilization used by a third-party Judge, or decision

maker, to make an overall decision. In this way, the cue values and their inter-correlations are as they naturally occur in the environment, and reflect the experience of the first-party Rater. In this case, what is typically referred to as 'achievement' in the traditional lens model (figure 3.1, point 7), becomes a comparison of the third-party Judge's judgment and the situation as experienced by the Rater.

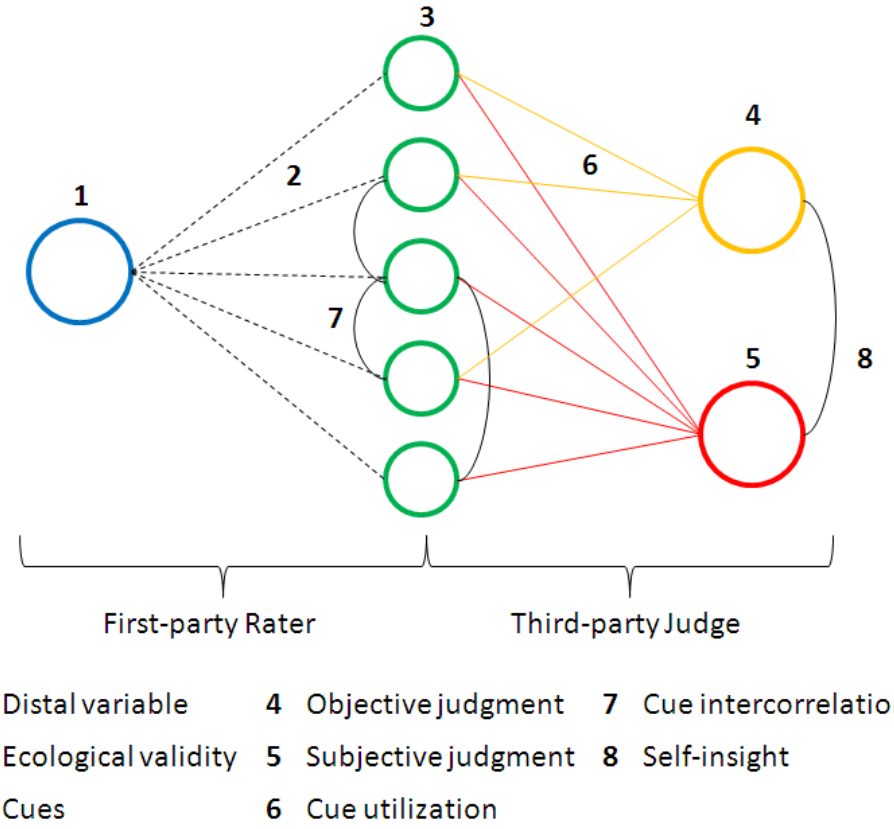

Figure 3.3: Representative Design Lens Model

Whichever variation of Brunswik's lens model is adopted, the methodology demands that "a judge produce a judgment for each of a series of cue configurations; these cue configurations having been either deliberately sampled from the judge's natural ecology or artificially constructed to simulate natural configurations" (Cooksey, 1996b). Representative design provides a tool for inferring an individual's policy of decision making, or to enable the researcher to ask "how the rays of the lens branch out, and how the lens is able to focus on distal objects" (Wolf, 2005; 4).

The lens model shows how decisions are made using cues, which provide information about a distal variable (situation). Policy capturing techniques (chapter 4) can be used to infer the policy used in making a decision, or simply, how the available cues are used to form a decision (cue utilization, figure 3.3, point 6). This is known as an individual's objective policy. The objective policy used by an individual is defined as the calculated cue importance, or the relative weight of each cue according to statistical regression. In addition, it is interesting to compare an individual's objective policy with their subjective policy (figure 3.3, point 8). The subjective policy (to be discussed in detail in the following chapter) is an individual's own reflection of cue utilization used in making a decision. The difference between the objective policy (that derived through regression) (figure 3.3, point 4), and a subjective policy (figure 3.3, point 5) can be used as a measure of self-insight (figure 3.3, point 8), to provide information about the ability of individuals to express how they made their judgment.

Funder stated that "every person lives within and interacts with an environment. Any study of the person that failed to integrate an analysis of the environment, and the person's interaction with it, would fall short of what psychology needs" (2001; 365). Research into how individuals make overall justice decisions should therefore be conducted using cues and cue configurations that accurately reflect the distal variable, or the situation that is being judged. Brunswik's lens model is concerned with "how the subjective probabilities match up with objective ones, and that means we have to ascertain what they are, and that leads us to representative design" (Hammond, 1998c). Brunswik's principle of representative design offers a means by which ecological validity can be achieved, and is introduced next.

3.4 Representative Design

Brunswik was revolutionary in highlighting the 'double standards' by which sampling was conducted by his contemporaries in psychological research (Hammond and Stewart, 2001b, Dhami *et al.*, 2004), and at the time he was writing double standards were "the rule rather than the exception" (Crow, 1957; 324). He used the expression 'double standards' to demonstrate that whilst psychologists (researchers) concerned themselves, often in great detail, and took much care over the sampling of participants in their studies (Hammond, 1998d), they were failing to give the same attention to the situation or environment in which the research was conducted (Dhami *et al.*, 2004); sampling was one dimensional. In such research designs, "sampling theory

was being ignored entirely with regard to the *objects*, or more generally, the "stimulus", or "input", or environmental *conditions* of the experiment" (Hammond, 1998d). Furthermore results from one dimensional sampling were then generalized beyond their experimental condition without adequate justification (Hammond and Stewart, 2001a). This was the fundamental problem seen by Brunswik who sought a "theoretically based methodology in which knowledge could be acquired objectively and applied to the natural world" (Albright and Malloy, 2000; 340); and this came in the form of representative design. The driving force behind representative design is that "one may generalize the results of observations only to those circumstances or objects that have been sampled" (Hammond, 1998d).

Representative design concerns "the arrangement of conditions of the experiment so that they represent the conditions to which the results are intended to apply" (Hammond and Stewart, 2001b; 4). Through representative design Brunswik called for the logic that is applied to participant sampling to be simultaneously applied to situations, so that each dimension reaches equal status (Hammond and Stewart, 2001b). A representative design is important as the accuracy and ability to generalize results is contingent upon an experimental design that reflects the real world, its people (participants) and its events (situations).

Representative design offers the ability to conduct real world analysis, using the natural environment in which participants live and in which they make decisions, a feat impossible in more traditional experimental designs in which the 'real world' is presented artificially to the participant (Wolf, 2005). Representative design can increase external validity and the ability to pose real world applications of findings.

3.5 An Idiographic Statistical Approach

The final concept of Brunswik's conceptual triplet relates to the analysis of results. Traditionally, a nomothetic statistical approach is taken to analyzing data. In such an approach individuals are treated as groups and are often aggregated in order to make generalizations about behavior, for here the purpose is the search for "deterministic laws of behavior" (Hammond, 1998c). However, this approach ignores the situational sampling dimension of representative design (Cooksey, 1996b), and so Brunswik advocated an approach to analysis at the individual level, or an idiographic statistical approach. This approach is concerned with "the uniqueness of each organism as it engaged in functional behavior within the context of a particular ecology"

(Cooksey, 1996b; 144). Through an idiographic approach to research and analysis an understanding can be achieved into the behavior of individuals within their complex and changing environment.

3.6 Participant Sampling

The sampling of participants is important in order that they represent a sample of individuals for whom the cues are salient for the situation under investigation, for whom the situation is realistic, and for whom the decision or judgment of a situation is a likely occurrence.

Traditional research, such as self-report surveys and experiments, increase their statistical power through increasing their sample size. Researchers often go to great lengths to sample their participants and adopt a nomothetic statistical approach in order that they can make some generalizations beyond the sample of participants used. However, with an idiographic approach and equal sampling on two dimensions, statistical power is achieved through the number of situations (*N*) used in a study, and not the number of participants (*n*) (Brunswik, 2001 [1955]). Representative design is not concerned with how different people cope with a situation, but rather, how an individual "copes with a representative, but rich sample of the ecology (or environment) around him" (Wolf, 2005; 1). In adhering to representative design large sample sizes are forsaken as participant sampling becomes secondary to the sampling of multiple situations which are naturally occurring for the participant. At the extreme, representative sampling can be conducted with as little as one participant, as in Brunswik's exemplar study on size perception (see overview of Brunswik's original study in section 3.8).

In an ideal world, researchers would wish to sample the entire population; however, this is impractical, and whilst the truest form of population sampling, this approach is abandoned in search of more feasible sampling options. One choice would be to use non-probability sampling, but this does not meet the full criteria of representative design and so the most conceivable approach is to randomly sample participants "to which the experimenter wishes to generalize the findings" (Dhami *et al.*, 2004; 962) using probability sampling. When attempts are made to sample, participant sampling is the most employed, however not the most desirable for those who wish to generalize (Hammond, 1948; 533). Brunswik stressed that the sampling of situations was the most important dimension as, "individuals are probably on the whole much more alike than are situations among one another" (1949; 179).

3.7 Situation Sampling

Social judgment theorists maintain that in order to understand the behavior of the individual "we must observe the person in a variety of environments" (Doherty and Kurz, 1996; 126), hence the importance of representative design which demands sampling on two dimensions.

Traditionally, researchers concern themselves with sampling their participants from the population to show that their results can have applications across a wider population who did not participate. However, for Brunswik, the essence of generalization lies in an equality between "participants (people) and the situation (object)" (Hammond and Stewart, 2001a; 5). Situational sampling is the key contribution of representative design, as sampling of participants is nothing new by itself. It is the combination of both participants and situational sampling that offers confidence in the ability to generalize results beyond the restrictions of the experimental context. Generalization need not be to the "real world", for this has "been assigned no properties, and no definition" (Hammond, 1998b), instead it is up to the researcher to explicitly establish the conditions to which generalizations will be made (Hammond, 1998c).

The collection of naturally occurring combinations of cues requires the researcher to "extract the formal properties of the ecology (e.g., cue intercorrelations and ecological validities)" (Dhami *et al.*, 2004; 969) which can then be used as natural situations representative of the decision maker. In complying with this step the researcher is then able to design the study so that situations are representative (reflections of the real world), and that the "informational properties of the experimental task presented to participants represent the properties of the ecology to which experimenters wish to generalize" (Dhami *et al.*, 2004; 972).

Situational sampling is considered the dimension on which it is most difficult to sample (Hogarth, 2005) and represents the bigger challenge for researchers. Despite this, it has been argued as the most important dimension (Hammond, 1948). For it is through the sampling of situations that "the range, distribution and intercorrelation among environmental variables will appear in the laboratory sample, and, therefore the laboratory conditions will be representative of the conditions toward which generalization is intended" (Hammond, 1998c).

3.8 Brunswik's Study of Size Perception

Brunswik did not just state theoretically how to achieve representative design, but also demonstrated its use empirically in the field of perception (Brunswik, 2001 [1944]). In his study entitled 'Distal focussing of perception: Size constancy in a Representative Sample of Situations' (Brunswik, 2001 [1944]) Brunswik showed first-hand "exactly what would need to be done to achieve the ability to generalize the results of a study to an organisms' natural habitat, that is, beyond the confines of a laboratory" (Hammond, 2001a).

Brunswik's perception study used only one participant, a psychology graduate and the task was described by Brunswik as follows:

"The subject, a graduate student in psychology, was interrupted at irregular intervals during the course of her daily activities, in various outdoor as well as indoor situations, and asked to indicate which linear extension happened to be most conscious to her at the moment"..."In each of these "life" situations, the subject had to give intuitive perceptual estimates of: (1) object size, (2) projective size (visual angle) and (3) distance" (Brunswik, 2001 [1944]; 70).

This study sampled one individual's decision making process over many situations with a final situation sample size of 174 situations (demonstrating statistical power through situation rather than participant size). Each of the situations used was as naturally found in the participant's ecology. Moreover, with the participant making judgments at random intervals over a four week period she was unable to predict when she would next be asked to choose a distal variable to judge. The conditions surrounding each judgment are more representative of the participant and situations in the real world, than could be achieved in a controlled laboratory experiment (Brunswik, 2001 [1944]), for the decision making was conducted in the participants actual environment. In this study, there was an objective measure of the distal variable – for example, the height of a tower or tree, the length of a wall, and actual distance from the participant. Additionally, the experimenter made similar (independent) judgments about the distal variable, before they recorded actual measurements, which were used as comparison judgments.

3.9 Benefits of Representative Design

Representative design, whilst not flawless, offers an approach to research design which overcomes traditional methodological issues concerning external validity and the ability to generalize (Dhami *et al.*, 2004). In stating the benefits of representative design, a comparison to the traditional systematic approach is often used. Systematic design, as the antithesis to representative design, involves the close control of variables which are isolated and manipulated by the experimenter to investigate actions and behaviors of individuals in a controlled context-specific setting (Hogarth, 2005; 259). Brunswik himself called for such inferior systematic designs to be replaced by experiments that are more representative of the real world in which individuals live (Hammond, 1996, 1998c, 2001b).

The use of a systematic design and a combination of close experimenter control and artificial combinations of cues means that findings are not generalizable to a wider population, context, or situation, in the way permitted through a representative design (Hammond, 1998c, Dhami *et al.*, 2004, Hogarth, 2005). Factorial and systematic designs by their very nature can elicit situations that do not accurately reflect the real world (Brunswik, 2001 [1944], 2001 [1955]) since "some of the intercombinations of variates may be incompatible in nature or otherwise grossly unrealistic" (Brunswik, 2001 [1955]; 145). The presence of unnatural correlations between cues can mean that the results obtained are "no longer representative of people's actual functioning in their ecology" (Dhami *et al.*, 2004; 962), and thus limits the ability to generalize. High internal validity is possible, but at the expense of external validity, that is, "the generalizability of a causal relationship beyond the circumstances under which it was studied or observed" (Dhami *et al.*, 2004; 960). Laboratory research in general has been criticized as being unrepresentative of real situations faced by participants, and furthermore it has been said that "the life of the mind is simply too complicated to be examined in the restricted conditions of the laboratory which, the critics often claim "trivialize" the topic" (Hammond, 1998b). Through representative design Brunswik showed that experimenters should more accurately reflect the environment to which they wish to generalize and that they "must resist the temptation... to interfere" (Brunswik, 2001 [1955]; 140), by manipulating variables and cue correlations. The value of representative design is that its use of naturally occurring situations for representative individuals ensures that "the research is conducted in the human being's normal,

familiar environment, rather than in artificial arrangements as can be found in classical experiments" (Wolf, 2005; 5).

However, when the aim of research is not to generalize beyond the experimental conditions, to what extent is a representative design important? Despite its use of artificial cue combinations that can be impossible in the real world (Dhami *et al.*, 2004), systematic design remains a design choice for many when the purpose is the "establishment of empirical regularities, or laws of behavior, within the laboratory" (Hammond, 1998b). The distinctions made between systematic design and representative design do not in themselves make one superior to the other. The choice of design should therefore be dependent on the research question and thus these two approaches should be seen as having "distinct yet complimentary purposes" (Dhami *et al.*, 2004; 981) and be valuable within their own specifications. A representative design being the method of choice when the purpose of the study "is to understand how an organism functions and achieves in its environment" (Dhami *et al.*, 2004; 981). Another question to be asked when choosing the design approach is; to what extent should research be about understanding individual behavior, or understanding group behavior? Whichever viewpoint is adopted, a representative design adds practical value to research. To understand individual behavior, representative design can be used to enhance external validity and to capture individual judgments and processes more realistically than can self-report surveys or artificially constructed experiments. Whilst in understanding group behavior, it has been noted that "to understand people,…we must sample persons as well as environments" (Doherty and Kurz, 1996; 127). Wider generalizations are permissible when "we observe the person in a sample of situations and develop a statistical description of that person based on that sample of situations" (Doherty and Kurz, 1996; 127).

Representative design has been shown to overcome two limitations of self-report methods, notably, the sampling of situations has been shown to almost eliminate any overconfidence effects and hindsight bias (Dhami et al., 2004). This can be attributed to the random nature of representative design and the naturally found cue configurations, which reduces any preconceptions by the participant.

3.10 Criticisms of Representative Design

Despite the advantages of adopting representative design, it has been adopted by very few psychologists (Hogarth, 2005), and by few researchers in general.[1] Representative design, like all approaches to research, is not flawless. Hilgard argued that "representative designs are no more foolproof than the other types of systematic design" ([1955], In Dhami *et al.*, 2004; 963), and Brunswik himself acknowledged that it was not perfect and that there are several problems with employing a representative design. These limitations can be divided into practical and theoretical issues.

Brunswik's argument that sampling should be two dimensional brought new challenges. Whilst at first glance, the sampling of situations alongside what it typically done with regard to the participants seems feasible, "it is diametrically opposed to a formidable tradition" (Hammond and Stewart, 2001a; 4). The challenge laid down by Brunswik is demanding (Hogarth, 2005; 257) and this may, at least in part, explain why representative design has not been so widely adopted.

The practical problems of representative design are the loss of experimental control, and it being time-consuming and cumbersome in nature (Brunswik, 2001 [1955], Hammond *et al.*, 1986, Hammond, 1998d). Whilst in traditional laboratory experiments variables can be controlled and manipulated by the researcher to identify their unique effects, this 'freedom' is lost through situation sampling which demands the use of variables in combinations that are representative and naturally occurring. Therefore the researcher must decide whether a systematic design or representative design is best suited to answering their research questions and achieving research goals.

Aside from practical limitations there are also theoretical issues. A wish by researchers to generalize results beyond experimental conditions requires researchers to define the population to which they wish to generalize (Dhami et al., 2004), and this is a custom rarely done in practice.

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[1] In my Masters dissertation (Durham University 2006/07) I conducted a review of organizational justice research to examine the extent to which representative design was adopted. In the empirical papers reviewed representative sampling on two dimensions was seldom achieved.

Another argument put forward for why representative design has not been embraced by researchers is a lack of awareness. During their education, research students are seldom introduced to Brunswik's work (Hammond, 1998d, Hammond and Stewart, 2001b, Dhami *et al.*, 2004). Students are taught of the need and practicalities of participant sampling but not of the possibilities that are opened through situation sampling and the consequent, and often desirable, ability to generalize findings. This oversight creates a group of potential researchers whose methodological orientation is that of systematic design. Furthermore, those who do know of Brunswik's work may be unwilling to go against the trend and adopt his design where a need for regular publications within tight budgets prevails (Hammond, 1998d, Dhami *et al.*, 2004; 979). In particular, the time and cost of conducting generalizable research alongside pressure from universities and funding bodies to publish regularly, may mean that researchers remain satisfied with systematic designs. However, Maher states that, "if the patience and time that it takes to do it right create better science, our gratitude should not be diminished by the probability that fewer publications will be produced" (1978; 647). Moreover, "conclusions based on inadequate sampling may be worse than no conclusions at all" if we apply these conclusions in practice (Maher, 1978; 647). In essence, if a job is worth doing, it is worth doing well. Unless made a criterion for publication, the adoption of representative design will likely remain limited, regardless of the benefits that are achievable through this design. Currently, when concluding research papers of empirical studies, researchers often seem happy to acknowledge their sample limitations in terms of the participants they used, but they infrequently take the same approach to the sampling of situations used. Dual sampling has yet to be embraced by most researchers.

To summarize, the limitations of representative design are primarily due to the additional effort required by the researcher in both practical and theoretical terms in order to understand the scope of one's own research and the extent to which generalization is possible. However, as supported by Crow, these practicalities, whilst making adherence more difficult for the researcher should not "lead the experimenter to ignore the fact that representative design is intrinsic to the study of interpersonal perception" (1957; 324), and the ability to produce findings which are more highly applicable, and more widely generalizable to the real world than traditional methods.

3.11 Representative Design and Organizational Justice Research

Justice researchers have not embraced representative design. Research in organizational justice primarily focuses on the perceived fairness of single events or stimuli (Greenberg, 1990b). Within justice research factorial designs are frequently adopted in experimental studies to enable the researcher to identify specific antecedents and consequences of injustice through close control and manipulation. However, such artificial designs prohibit generalization outside the experimental conditions due to the use of cue correlations which can destroy "the natural existing causal texture of the environment to which an organism has adapted" (Dhami *et al.*, 2004; 962). Similarly, in studies which adopt a field setting, participant sampling is realized, but often data is collected on only one situation by either asking participants to describe a situation they have experienced that was unfair, or asking participants to report on the antecedents or consequences of a specific unfair event that is described to them, i.e., researchers adopt a context specific approach to justice.

3.12 Conclusion

Representative design "has shifted from an unattainable ideal to a prudent goal" (Dhami *et al.*, 2004; 254). Dhami *et al.* believe that representative design can become "an important instrument in our methodological toolbox" (2004; 983). Advances in technology should aid the adoption of representative design which samples both the participant and the situation (Hammond, 1998c), for example through the use of mobile phones, computers, or experience sampling methods (Hektner *et al.*, 2007). Through such techniques researchers can more effortlessly capture responses (judgments) from participants, across different times, situations and contexts, within the individual's natural ecology.

It is through the application of representative design that the practical applications of research can be enhanced and generalizations can be justified with greater confidence, thereby increasing the potential value of research (Hogarth, 2005).

The two empirical studies conducted in this thesis adhere to the dual sampling demands of representative design to investigate the formation of overall justice judgments. In this manner the cues on which judgments are based are representative of the stimuli in the real world, which increases ecological validity, and the cues represent a range of situations which are relevant and realistic for the participants. Decision making policies (Study 1) and processes (Study 2) are

inferred using an idiographic design and some generalizations are made for practitioner guidance. The first step in these studies was the formation of realistic situations through cues and cue configurations that naturally represent the situation, i.e. the left hand side of the lens model. Second, the participants were sampled to be representative of the context and situation under investigation. These studies provide an insight into the cue utilization process that occurs between stimulus and response, which is represented on the right hand side of Brunswik's lens model. These studies contribute methodologically to organizational justice research by exploring how justice judgments are made in a real world context, that of performance appraisal experiences.

Chapter 4: Policy Capturing

4.1 Introduction

In the previous chapter Brunswik's lens model and theory of representative design were introduced. Brunswik's lens model (as seen in chapter 3) is a graphical illustration of the "relationship between subject and task" (Hammond and Summers, 1972), and how individuals interpret the world around them using cues from the environment. One methodology which has evolved from Brunswik's probabilistic lens model is policy capturing (Aiman-Smith *et al.*, 2002). However, the argument that policy capturing is founded on Brunswikian ideas has been contested by some of his advocates, such as Stewart (1998) and Cooksey (1998), as policy capturing in itself does not adhere to representative design or naturally occurring judgment problems. Rather, policy capturing is a methodological approach to researching decision making, and has been described as a "general procedure designed to describe statistically the unique information processing strategies of individual raters" (Hobson and Gibson, 1983; 640). The primary goal of this methodological approach is thus to gain insight into the processes by which an individual combines information in reaching a decision. It is only with careful and extensive attention to study design that policy capturing (in the absence of an external correlate) incorporates the environmental distal variable of Brunswik's lens model and conforms to a representative design exposing individuals to familiar and realistic tasks from their natural ecology.

A policy capturing design lends itself particularly well to studies of organizational behavior and human resources where decision processes are to be explored, and the researcher wishes to examine what "pieces of information are most influential in determining decisions" (Aiman-Smith *et al.*, 2002; 388). In a review of policy capturing studies published over the past 25 years Karren and Barringer (2002) find that approximately half of all studies concerned decision making situations in the context of job choice, job applicant ratings and performance evaluations. Policy capturing is one methodology which can be used to answer Van den Bos' (2001) call for research with greater experimental control through laboratory experiments, in order to better understand *how* justice judgments are formed.

In this chapter, policy capturing is first introduced alongside its common terminology. The design of a policy capturing study is discussed in relation to cue selection and cue

presentation (of the situation) and then with regards to the decision makers (the participants). In section 4.4, self-insight is introduced as a comparison of objective policies obtained through regression and an individual's subjective report of their decision making processes. The advantages and disadvantages of policy capturing as a methodology are then considered in sections 4.5 and 4.6. In this thesis, policy capturing is adopted using a representative design and the ability to generalize results using this methodology is considered throughout the chapter. The actual process tracing study conducted in this thesis is detailed in chapter 5 which follows.

4.2 What is Policy Capturing?

In policy capturing studies participants are presented with multiple situations that "vary the factors of interest to the researcher" (Webster and Trevino, 1995; 1550). Based on this information the participant is then asked to make a decision, or judgment, about each situation. Application of this indirect research method enables the researcher to gain an insight into individual's decision making by identifying an individual's unique decision making policy in terms of how they "weigh, combine, or integrate information" (Zedeck and Kafry, 1977; 51) in reaching a decision. Policy capturing is "an idiographic, statistical approach" to research (Hemingway and Conte, 2003; 1592) which provides the researcher with an objective description of how individual cues contribute to the judgments made by an individual (Hobson and Gibson, 1983, Cooksey, 1996b). In addition, an individual's subjective policy can be attained relatively easily and can be compared with an objective policy, as a measure of an individual's self-insight into their own decision making.

Before continuing, it is necessary to clarify some of the terminology that is used in the policy capturing literature and is adopted in this thesis. This is done by describing the design process of the policy capturing study used in this thesis.

Policy capturing is used to gain an insight into the information used by individuals during the decision making process. In this thesis the decision makers, or participants in the experiments, are called Judges. A representative design is adopted in this thesis and thus it is necessary to distinguish between the decision makers (Judges) and the individuals whose experiences are the stimuli being assessing, a group referred to as Raters.

To form a judgment about a situation Judges are presented with stimuli, or cues. These cues are presented to the Judges in the form of a profile representing one situation. Each profile

contains cues relating to one individual's (a Rater's) reflection of their own experience. The profiles from each Rater are then collated into the profile set. In essence, the profile set provides many individual's reflections of a single experience on which a Judge should make a judgment, i.e., a decision based on the assessment of available cues. A judgment here is defined as "the process of evaluating evidence, modifying beliefs based on the evidence, and stating or otherwise acting on those beliefs" (Read, 2005).

Once a Judge has made an overall assessment about each profile in the profile set, their objective policy can be determined through statistical regression of their judgments (dependent variable) against the available cues (independent variable). An objective policy is determined for each Judge and refers to how they used the cues, in terms of their importance, in reaching an overall judgment. This is in contrast to a Judge's subjective policy. A subjective policy is the policy of an individual Judge as stated by that Judge, that is, an individual's own perception of how they reached their judgments. Reilly and Doherty describe this as "the weight assigned to the attributes as the person considers how important they were in his or her holistic judgments on a just completed set of profiles" (1992; 286).

4.3 Policy Capturing Design

To achieve representativeness in an experimental design it is imperative to "focus on designing appropriate scenarios, constructing useful measures, and determining whom the respondents should be" (Aiman-Smith *et al.*, 2002; 392-393). A policy capturing study should therefore combine cues, tasks, and decision outcomes as they would exist in the real world (Aiman-Smith *et al.*, 2002). The adoption of Brunswik's theory of representative design which samples both the situation and participants can further enhance the level of external validity that can be achieved. In the following sections policy capturing review and empirical papers are used to describe the process of designing a policy capturing study, including cue selection, the presentation of cues, and the decision makers. Throughout these sections it becomes evident that the combination of policy capturing and representative design holds promise for gaining insight into the decision making policies of individuals in the real world.

4.3.1 Cue Selection

As introduced in chapter 3, ecological validity is achievable through the use of cues that accurately portray a situation in the real world. In policy capturing a judgment is inferred through consideration and assessment of stimuli, or cues, and during the design stage consideration should be given to the choice of cues, the number of cues, how the cues are to be presented to the participant, how they are correlated and whether they are representative of cue configurations found in the real world.

Identification of the cues to be used in policy capturing is essential. On the one hand the researchers should include all information that could be important for decision making, but at the same time keep the number of cues to a minimum (Stewart, 1988). Too many cues can lead to fatigue or boredom for the participant, affecting the validity of data, whilst too few cues can fail to capture what is really important (Webster and Trevino, 1995, Aiman-Smith *et al.*, 2002). Keeping the number of cues limited and relevant is important so as not to overwhelm the participant, as respondent overload and stress can affect the accuracy of responses which are subsequently given (Webster and Trevino, 1995).

Whilst a consensus has not been agreed, Stewart (1988) asserts that most studies use between 3 and 20 cues, whilst Aiman-Smith *et al.* (2002) advise between 7 to 9 cues. Individuals have been shown to make decisions using only a subset of the cues available to them (Taylor and Wilsted, 1974, Brehmer and Brehmer, 1988) and thus selection of relevant and salient cues is essential. Having identified a pool of possible cues, conducting the cue selection process with individuals who are of the same sample as the actual decision makers will reduce the chances of omitting important cues. The evidence suggests that individuals actually make judgments based on a relatively small number of cues (Slovic and Lichtenstein, 1971, Karren and Barringer, 2002), and "since judges typically report using more cues than they actually use, it is more likely that unimportant cues will be included than the important ones will be excluded" (Stewart, 1988; 43-44). Policy capturing studies can only infer an individual's policy from the available cues, yet it is not possible to include all information the decision maker would naturally have available to them (Aiman-Smith *et al.*, 2002), and whilst many cues may increase confidence in individual's decision making, it will not increase the quality of the decision (Slovic and Lichtenstein, 1971). The thorough sampling of cues that would be most salient to the sample of participants in a situation can increase both the realism and external validity of a study (Karren and Barringer,

2002; 344). Aiman-Smith *et al.* reason that when cues are properly selected and the task is well designed, it can provide "useful, although incomplete, models of policy-capturing processes" (2002; 406). Nonetheless, it should be noted that policy capturing studies are often situation specific and "regression weights have meaning only in the context of the decision task in which they were derived" (Lane *et al.*, 1982; 239).

Various methods have been employed for presenting the cues, or information, to the participant. These include the use of paper profile booklets and the use of computer software (Stewart, 1988). Cues may be presented all at once, or may require the participant to actively search out the information they desire (from the set of given cues) to make their judgment. Cues can be represented as numbers or values on a Likert-scale, graphically such as with bar charts, with written text such as scenarios, or even having participants watch video-taped interactions (Gillis *et al.*, 1995) or listen to audio tape recordings instead of using visible cues (Dougherty *et al.*, 1986). Some researchers have even used photographs as cues (Shaw and Gifford, 1994) whereby photographs were first split into two categories (high and low vulnerability to burglary of house), and then participants were asked to provide an explanation for each decision. There is, however, evidence to suggest that numerically based cues are rated more consistently than written descriptions (Anderson, 1977).

Having identified appropriate cues, their presentation in terms of how the information is configured and conveyed to the participant has been primarily artificial in existing studies. Hypothetical or artificially created profiles utilizing numerical cues are often created using random number generator programs. Whilst they permit a high level of control for the researcher and the ability to manipulate situations, for example, ensuring that cues are fully-crossed so each combination is presented within a profile booklet, this is often at the expense of realism. The manipulation of artificial profiles or situations can ultimately engender situations not possible in the real world (Dhami *et al.*, 2004) and thus preclude the representativeness of results and the ability to generalize. Moreover, Mahoney and Klass acknowledged that their artificially designed cues "may have affected how cues were interpreted by decision makers" (2008; 237), and as such this may have influenced participants' overall judgment of the situation. For achieving a representative design in policy capturing cues "must be arranged to mirror their relationships in the environment being studied rather than to be orthogonal to one another" (York, 1989).

Aiman-Smith *et al.* (2002) identify lack of realism as the biggest weakness of policy capturing. Most existing policy capturing studies have used "paper-people" in the design of their situations on which decisions are to be made. "Paper-people" represent a supposed experience of a person on which another is asked to make a judgment (Gorman *et al.*, 1978). However, this can result in tasks which "may not be perfectly representative" (Hemingway and Conte, 2003; 1611), and has been shown to be a poor substitute for real experiences of individuals (Gorman *et al.*, 1978). This means that "participants' responses to the impoverished stimuli presented in policy capturing studies should not always be expected to generalize to responses in a real-world situation" (Dalal and Bonaccio, 2009; 11-12). The ability to generalize is therefore a limitation of most existing policy capturing studies that adopt an artificial design. One contribution of the studies in this thesis is therefore the use of situations which are reflections of "real" people rather than "paper people".

Compiling a profile booklet of naturally occurring situations, in which cue combinations reflect real world configurations, can assist in improving the external validity of results (Sherer *et al.*, 1987), whilst also enabling the researcher to concurrently control internal consistency (Webster and Trevino, 1995). Achieving a representative design in policy capturing requires two (or even three) participant samples. In the cue selection and development stage, a representative sample, or other means of salient cue identification such as existing literature or company policies, can be used to derive the list of cues that are potentially most salient to individuals in a given situation. In a second stage, a representative sample, for whom the task is relevant and characteristic then respond to the cues for a given situation to provide a set of situations in which cues are naturally occurring and realistically configured. These can then be compiled into a profile booklet for the main decision making task. Evidently this process requires more time and effort than policy capturing of an artificial design in terms of development and constructing the task, and also requires a large enough sample to first collect the situations and then administer these to the decision makers.

To summarize, achieving a representative design that has high external validity requires care in cue selection and configuration to "include salient and realistically defined cues and to avoid unlikely cue combinations" (Karren and Barringer, 2002).

4.3.2 Cue Presentation

In compiling the profile booklet containing the cues to be used in judgment making, start-up effects can be controlled through practice profiles and reliability can be measured using duplicated profiles. Controlling for start-up effects is important. Whilst the task and method should be appropriate and relevant for the participant, it is assumed that the participant will need time to learn how to participate. The use of practice profiles at the start of the task provides the participants with a chance to understand what is being asked of them, to familiarize themselves with the cues that are presented to them (and how they are presented) and how they should respond (Aiman-Smith *et al.*, 2002). The use of practice profiles also provides the opportunity for participants to seek clarification, if required, before proceeding with the main task. Ultimately, this process can increase reliability, and these profiles can be dropped prior to analysis (Aiman-Smith *et al.*, 2002), as they are not likely to be representative of the process used during the main decision making task.

To achieve statistical power in policy capturing studies, the number of profiles or situations to include has been the subject of debate amongst researchers. Rossi and Anderson ([1982] In Webster and Trevino, 1995) advise less than 60 profiles, whilst Cohen and Cohen ([1983] In Cooksey, 1996b) suggest the use of 10 scenarios per cue variable. Cooksey advises a ratio between the number of profiles (situations) and the number of cues of at least 5:1 (1996b), with Aiman-Smith *et al.*, suggesting between 50 and 80 written scenarios is ideal (2002). The studies designed in this thesis comply with Cooksey's 5:1 ratio and as 10 cues were identified, at least 50 profile situations were required. In total 56 situations are used in Study 1 and 2 which complies with the advice of Rossi and Anderson, Cooksey, and Aiman-Smith (chapter 5, section 5.4.2).

To minimize the effects of fatigue and boredom, Cooksey (1996a) states that participants should be able to complete their task in one sitting, and be asked to consider no more than 100 scenarios. In addition, if the task takes more than an hour to complete a break should be given to respondents to relieve tiredness (Aiman-Smith *et al.*, 2002). In itself, completion within one sitting naturally limits the number of profiles that can be contained within a single booklet. The selection of relevant participants and controlling the length of a policy capturing study can improve both the validity and reliability of results (Karren and Barringer, 2002).

Though seldom used, repeat or duplicate profiles can also be included within the task as a measure of reliability (Aiman-Smith *et al.*, 2002, Karren and Barringer, 2002). These may be removed from the data set prior to the primary analysis (Aiman-Smith *et al.*, 2002) and can be used as a reliability or consistency measure to compare judgments between the first and second profile occurrence (Karren and Barringer, 2002). However, the process of duplication can become problematic if too many are included as this would extend the length of the task which could lead to boredom and fatigue.

Judgment is often collected through a single-item measure , as "multiple responses are usually highly correlated and do not add significantly to the understanding of cue importance" (Hemingway and Conte, 2003; 1599). Response collection techniques have included the use of Likert-scales, or asking participants to mark their judgment on an appropriate point on a scale which has anchors at two opposing ends (Stewart, 1988). The response mode should be relevant for the situation on which the decision is made (Aiman-Smith *et al.*, 2002) and should not be too restrictive. If it is, then it is possible that valuable information can be lost (Russell *et al.*, 1991, Russell and Bobko, 1992).

Anderson argues that the environment in which the profile judgment task is carried out may affect the participants use of cues and their given responses, and that the decision to have the task completed in a laboratory with a researcher, or at home in the participant's own time can affect motivation and attitude towards the task (Anderson, 1977). For example, Brannick and Brannick (1989) gave their participants one month to complete and return two profile booklets of 160 situations. Due to the length of the booklet and the time permitted it may be assumed that participants completed the task over several sittings, which could lead to poor levels of consistency throughout the task. Task completion away from the researcher and laboratory conditions can affect consistency of the responses provided by a participant, and thus it could be argued that a freer environmental setting may be less realistic than a structured laboratory setting which adheres to representative design.

4.3.3 The Decision Makers

In traditional research methods such as self-report questionnaires or even experiments, statistical power and the ability to generalize results are increased through the addition of more participants. In policy capturing the "sample size is equal to the number of scenarios per person,

not the number of people" (Webster and Trevino, 1995; 1566) and thus it is not unusual to find small sample sizes being used (Hemingway and Conte, 2003; 1610). A small sample size may be acceptable due to the nature of analysis. In policy capturing, the emphasis is typically on within-individual analysis and the decision making process used by individuals (Karren and Barringer, 2002, Aiman-Smith *et al.*, 2002), and the size of analysis is based on the number of scenarios judged by that individual. For example, Rynes and Lawler (1983) conducted a study with 10 subjects, but had each make assessments on 72 situations, Dougherty *et al.* (1986) used 3 participants who each rated 160 situations, and Hemingway and Conte (Hemingway and Conte, 2003) had 23 participants rating the fairness of layoff procedures used in 100 scenarios. From a Brunswikian perspective "large samples of individuals are not required because the emphasis is on the representative design of experiments and sampling from the ecology or actual environment" (Athanasou, 1998; 224). As with Brunswik's perception study (1944 (see Chapter 3, section 3.8) policy capturing techniques are possible with just one participant (Aiman-Smith *et al.*, 2002).

In traditional research methods, such as self-report surveys or interviews, participants are often sampled in order to reach a wide, or specific, demographic of individuals in order to increase the ability to generalize results. In policy capturing however, the focus is on individual processes, and so it is important that the individuals selected as decision makers are ones for whom that decision would be a relevant task and who would have experience with making such judgments (Webster and Trevino, 1995, Cooksey, 1996b, Aiman-Smith *et al.*, 2002, Karren and Barringer, 2002). For example, sampling from students can be appropriate if the aim is to gain insight into decisions that affect them, such as factors affecting job choice (Feldman and Arnold, 1978, Judge and Bretz, 1992). However, student samples have also been used when they do not represent an 'expert' sample, i.e. when they are asked to complete tasks they would not conduct in the real world. In their study on performance appraisal decisions for supermarket checkers, Zedeck and Cascio (1982) used students rather than managers as the decision makers. They used students to rate performance of supermarket checkers in terms of need for development, whether they should be given a raise and whether they should be retained. In this case, students may have had experience with the role done by a supermarket checker, but would not have had any experience in evaluating their performance. A "realistic decision problem is one that is representative of the problems that occur naturally in the participants' environment" (Karren and

Barringer, 2002; 344). Therefore, if the decisions that participants are being asked to judge are not reflective of situations that would naturally be experienced by that person then "the results may be biased and cannot be generalized to nonexperimental settings" (Ibid; 344).

With policy capturing, however, grouping or summarising of results is still viable (Cooksey, 1996a), in order to examine decision making policies between-individuals. For researchers who adopt a nomothetic approach sample size will be important. Aiman-Smith *et al.* (2002) discuss that whilst the nature of policy capturing is to identify individual differences and not make comparisons between individuals, this is also achievable with policy capturing. For example overall aggregated policies in decision making can be explored using clustering techniques to group individuals with comparable policies (Karren and Barringer, 2002). Individual's can be clustered into groups based on some similarities that exist between them (Zedeck, 1977), for example individuals' demographics, work department or tenure.

4.4 Objective versus Subjective Policies

After task-completion, individuals' believed policies (their subjective belief of the processes they think they followed during completion of the task) are frequently collected, and can be used to assist with the interpretation of results (Aiman-Smith *et al.*, 2002). Subjective policies can be obtained through interview or questionnaire where individuals are asked to state their policy descriptively, or by assessing the perceived importance of individual cues used during the task. For example, participants can be asked to distribute 100 points across the cues (Hoffman, 1960), or to rate the cues in perceived order of importance. However, whilst cognitively aware of the most salient cues, individuals may be unable to attribute an accurate weight to it, and when asked to rate the importance of cues individuals are not allocating relative weights but rather identifying the individual importance of each available cue (Anderson, 1977). In these ways it is possible to ascertain an individual's subjective assessment of the cues that they considered salient to their judgment process (either relative or individually). This subjective weighting can then be compared to the objective weighting derived through regression as a measure of individual self-insight (Reilly and Doherty, 1992). However, Reilly and Doherty, in a review of methods used to collect subjective policies, concluded that "people do not have substantial self-insight into their judgment policies" (1992; 288).

Policy capturing research has consistently shown that "an individual's subjective assessment of his or her own judgment policy (i.e., the major factors that subjects report as having contributed to their judgment) is often at odds with the statistical (i.e., captured) assessment of the same judgment" (Carkenord and Stephens, 1994; 676). That is, there are inconsistencies, or only moderate correlations, between objective and subjective policies. The evidence suggests that individuals have poor self-insight into their own decision making policies (Slovic and Lichtenstein, 1971, Nisbett and Wilson, 1977, Hobson and Gibson, 1983). Individuals have been shown to "strongly overestimate the importance they place on minor cues", and "underestimate their reliance on a few major variables" (Slovic and Lichtenstein, 1971; 684), and it may be that individuals overestimate their policies to appear more complex than they actually are (Hoffman, 1960). Existing policy capturing studies have also shown that "decision makers perceive a more equal weighting of criteria than the statistical analysis indicates" (Stumpf and London, 1981; 753) and also that individuals tended to report the use of more cues than they use in practice (Hobson *et al.*, 1981, Reilly and Doherty, 1992).

Social desirability has also been shown to lead individuals to over- or under-rate the importance of cues in their subjective policies (Roehling, 1993, Webster and Trevino, 1995, Karren and Barringer, 2002). Whilst Mazen (1990; 20) states that "the desire to be socially acceptable has prevailed over the indirectness assumed in the policy capturing task", he continues to say that self-reporting techniques induce more social desirability than that of policy capturing. In comparing judgment collection methods, Arnold and Feldman (1981) support that subjective weightings were more susceptible to social desirability response bias than those that were objectively inferred through analysis. The use of policy capturing as an indirect method to infer the objective policy of decision makers through regression, provides a more accurate description of the process used than can subjective reports. In policy capturing, individuals "evaluate positions rather than directly state preferences for specific position factors" (Cable and Judge, 1994; 328), the latter of which are more likely to be affected by social desirability factors.

Whether subjective policies are collected pre- or post-task may affect the accuracy of self-insight. Subjective weights are often collected post-task completion in order to prevent the subjective task influencing the main policy capturing task (Mazen, 1990). Zedeck and Kafry (1977) believe that when collecting subjective policies after the main task, it is not surprising that individuals are found to rate more cues as salient than they had actually used. This is because

they had already been exposed to the task and thus "it is not too surprising that the subject thus indicates that many of the *X* factors influenced the decision that he/she had just made" (Zedeck and Kafry, 1977; 290). Subjective weights that are collected post-task have been shown to be "more varied and more highly correlated with the statistical weights than those taken prior to the task" (Reilly [1987] In Reilly and Doherty, 1992; 290).

Reilly and Doherty (1992) suggest that objective and subjective policies differ not because individuals lack insight but due to researchers inability to measure them. In their 1989 study, Reilly and Doherty found a difference in self-insight when subjective policies were produced by individuals (rating the cues) or recognized by individuals (from a set of used policies), and thus it could be "possible that the two procedures are measuring different things" (1989; 129).

Given the differences that are found between objective and subjective policies, it has been shown that calculated objective weights "provide a more accurate prediction of actual judgments than do subjective weights that are derived through self-report instruments" (Hemingway and Conte, 2003; 1593). Policy capturing enables us to observe the decision making process, which is important given that we cannot rely on peoples' subjective accounts (Read, 2005).

4.5 Advantages of Policy Capturing

Many of the advantages of policy capturing are achieved through thorough planning by the researcher at the design stage of the study. A policy capturing methodology is unique in its ability to gain insight into the decision making process and to measure the correlation and relationship between subjective and objective decision making policies.

Policy capturing as a methodology offers several benefits over self-report methods such as interviews or questionnaires. As an indirect method of examining the decision process of individuals, policy capturing can alleviate validity concerns due to differences between subjective and objective decision policies (Karren and Barringer, 2002) (as previously discussed). It has been shown to overcome social desirability bias (Karren and Barringer, 2002) due to it requiring a holistic response from participants (excluding their subjective weights) (Roehling, 1993), and reduce common method variance bias that is found in self-report measures (Hemingway and Conte, 2003). This methodology in combination with statistical analysis has

the ability to offer insight into the decision making process, which may be missing from the subjective policies of individuals (Roehling, 1993).

One further advantage of policy capturing is that it can enable the researcher to gain indirect insight into decision making, but at the same time can permit experimental manipulation and control, and lead to high internal validity (Webster and Trevino, 1995, Aiman-Smith *et al.*, 2002). The level of internal validity achievable through policy capturing methodologies, combined with the level of external validity which can be achieved through the adoption of representative design presents a unique research design with both high internal and external validity.

4.6 Limitations of Policy Capturing

As with all research methodologies, policy capturing also has its limitations, some of which have been addressed already in this chapter. A further criticism may be that a policy capturing task does not reflect actual decision making experiences in the real world. It may be that decision makers make actual decisions based on "contextual factors present in ongoing decision processes" (Aiman-Smith *et al.*, 2002; 391) and thus the artificiality of most policy capturing studies may capture insight into a misleading artificial decision making process. Decision making in policy capturing requires individuals to use a set of cues that they see for the first time and for a limited period of time, and this may not reflect actual decision making in the real world. The researcher can however, enhance the accuracy of decision making by ensuring that the situation and cues being used are relevant for the sample of decision makers (i.e., through a representative design).

Asking participants to make a one-off decision, particularly when each individual may draw on their own experiences of a situation may be problematic, as in reality, judgments become part of an ongoing process, and are not simply one-off decisions. Whereas, in policy capturing studies, participants make decisions based on limited information, in the real world they are likely to draw on much more information when making actual everyday decisions, as "people use many intertwined bits of information" in decision making (Anderson, 1977; 68). Other factors that an individual may bring to their decision making process could include past experiences, rumours, and expectations, which may impact upon cue utilization in the decision making process. Policy capturing results should therefore be assessed in relation to the context

used and it should be acknowledged that the cues identified as most salient are the most salient amongst the available cues.

The speed at which decision making occurs is also manipulated in policy capturing studies. In the real world, judgments may be formed slowly, or an individual may be given time to reach their decision, which is not always the case in a policy capturing situation. Even in the case of studies in which a participant is given a profile booklet to take away with them to complete in their own time (Brannick and Brannick, 1989), it is unrealistic to expect that they would spend prolonged periods of time assessing each situation before reaching a decision.

It is acknowledged that policy capturing techniques have their disadvantages; they do not permit inclusion of all possible cues and also prompt decision making in a controlled manner, which may differ from the real world. However, the strength of policy capturing is in its ability to identify cues which are salient to an individual (from those available), the ability to compare objective and subjective weighting of cues in decision making, and the identification of consensus or variation between individual judgment policies.

4.7 Policy Capturing and Organizational Justice

A policy capturing methodology holds promise for further understanding of how individuals make justice judgments, but to date has not been fully embraced by those in the field. A literature search on three academic journal databases; *Science Direct,* and *EBSCO business source premier* and *Sage Journals Online,* and on *Google Scholar* returned surprisingly few studies with a keyword search of 'organiz(s)ational justice' and 'policy capturing'.

The results of this database search are shown in table 4.1. Fairness perceptions were used as the dependent variable in 7 of the policy capturing studies. This overall judgment was often made on a 7 point Likert-scale for scenarios whose variables are manipulated. However, in all the studies some form of factorial design was used to determine the cue combinations presented to the decision maker. Promisingly, Hemingway and Conte (2003) took steps to eliminate unrealistic cue configurations. They first used a random generator to combine 12 organizational practices so that they were equally represented in the task. They then took the fully crossed scenarios to a sample of university administrators and MBA students to assess clarity and realism. Scenarios were then edited or dropped to form the final 100 scenarios. To date, justice researchers have adopted a largely artificial approach to designing policy capturing studies.

Existing research has considered the relative importance of factors, which are not necessarily antecedents of justice, which may lead to justice perceptions, but has not yet demonstrated how the justice antecedents used in common justice scales are weighted and how they contribute to an overall justice judgment.

Study	Sample	Task	No. situations	Realism of situation	Role of Justice	Results
Rousseau & Anton (1988)	171 students	Fairness of job termination	27 scenarios	(3x3x3x3x3x3) and then chose 27 to achieve orthogonality	Dependent variable. Each termination scenario judged on scale from 'very unfair' to 'very fair'	Fair job termination should give consideration to seniority and any previous formal commitments made to the employee regarding long-term employment.
Rousseau & Aquino (1993)	121 students	Fairness of job termination	27 scenarios	(3x3x3x3x3x3) and then chose 27 to achieve orthogonality	Overall fairness – dependent variable. Procedural justice – independent variable	Procedural justice – voice and explanations – impact fairness but fail to remedy a breach of contract
Bretz & Judge (1994)	65 students	Likelihood accepting job offer	128	Fully crossed factorial design (2x2x2x2x2x2x2)	Independent variable. Manipulated as organization being distributively justice, procedurally just, or no reference to justice system made	Individuals who had higher fairness values preferred to accept jobs in organizations that were distributively and procedurally just.
Martocchio & Judge (1995)	19 triads (1 supervisor and 2 subordinates)	Making disciplinary decisions	70 (including 6 repeated scenarios)	Fully crossed design (2x2x2x2x2x2)	Perceptions of overall justice -control measure	The more supervisors and subordinates differed in organizational justice perceptions, the more discrepancies in disciplinary decision

Study	Sample	Task	No. situations	Realism of situation	Role of Justice	Results
Dulebohn & Martocchio (1998)	414 university employees	Fairness of pay rise decisions	52 scenarios (including 4 repeated scenarios)	Fully crossed factorial design (2x2x2x2x3)	Distributive justice antecedents used as independent variables Overall fairness - dependent variable. Relative importance of factors in forming perceptions of fairness	Differences in distribution rules used by individuals to rate distributive justice of pay rise. Perceptions of distributive justice moderated by length of tenure, lack of alternative job offers, age, fairness orientation and marital status.
Werner & Ones (2000)	78 MBA students	Perceived fairness of pay inequities against comparative other	25 scenarios (including 7 repeated scenarios)	Fully crossed factorial design (3x3x2)	Dependent variable. Each scenario judged on scale from 'very unfair' to 'very unfair'. Use communication (interactional justice) as subsection of procedural justice	Explanations may increase perceptions of the fairness of pay outcomes. When individuals felt little injustice anyway, then explanations had minimal effect.

Study	Sample	Task	No. situations	Realism of situation	Role of Justice	Results
Tripp, Bies & Aquino (2002)	162 MBA/MA students	Symmetry between revenge act and provocation	1 (though claim to use policy capturing in their methodology)	Fully crossed factorial design. (2x2x2)	Justice, and specifically, its importance as a moral virtue, is used to explain results	Acts of revenge which match the level of provocation are judged as more acceptable, just and ethical.
Hemingway & Conte (2003)	23 employees in professional and managerial positions	Fairness of layoff practices	100 (administered in 4 blocks of 25)	Randomly generated so each of the 12 practices were equally represented. Then had sample of business school administers and MBA students read the 120 scenarios and comment on realism and clarity. Most realistic 100 scenarios used in study	Dependent variable. Each layoff scenario judged on scale from 'very unfair' to ' very fair'	Structural components of justice played more importance in fairness decisions than social components (interpersonal and informational) of justice, when assesses simultaneously.
Dineen, Noe & Wang (2004)	94 students	Fairness of web-based applicant screening procedures	32	Fully crossed factorial design (2x2x2x2x2)	Dependent variable. Relative importance of four items of procedural justice in predicting fairness perceptions	Hierarchy of relative importance of PJ items. Consistency of the screening process had strongest effect. Relative weights moderated by gender, conscientiousness and prior experience.

Study	Sample	Task	No. situations	Realism of situation	Role of Justice	Results
Mahoney & Klaas (2008)	83 former jurors	Employment disputes for wrongful dismissal	38 (including 4 repeated scenarios)	½ factorial design (2x2x2x2x2x2)	Implications for third-party justice research	Decision makers influenced by justice motive to compensate victims and correct retribution. For organizations – high interpersonal justice can mitigate likelihood of being deemed worthy of punishment.
Blancero, DelCampo & Marron (2010)	450 employees from 7 organizations	Fairness perceptions of dispute resolution systems	64 scenarios	Fully crossed factorial design (2x2x2x2x2x2)	Dependent variable. Rate fairness of procedures (PJ), outcome (DJ), response to explanation (Interactional), and overall fairness of the system	Overall fairness perception influenced more by procedural and interactional variables, than outcome (DJ). Unfavorable outcome can be perceived as favorable when fair procedures are used.

Table 4.1: Organizational justice and policy capturing studies

4.8 Conclusion

Organizational justice research can benefit from policy capturing methods which permit close control by the researcher to gain an objective insight into individual's decision making, and which can be done in combination with representative design. The sampling of both the situation and participants ensures that task stimuli is representative of the real world for the participants and thus the cues that are identified as salient through policy capturing are relevant and realistic for the decision maker.

Policy capturing has been used sparsely in organizational justice research and where it has been used it is most likely the dependent variable to factorial artificially designed situations. Policy capturing methods have yet to be used to identify the role of individual justice antecedents used by an individual when forming an overall justice judgment about an event, and moreover, an event that is a realistic and representative situation for an individual.

Study 1, which follows in the next chapter, uses a policy capturing methodology to explore how overall justice judgments are formed. Policy capturing is used to gain an insight into the relative importance of individual antecedents across the four justice dimensions, as used in Colquitt's (2001) seminal justice scale, and to better understand how these antecedents are utilized in overall justice judgments.

Chapter 5: A Policy Capturing Study in Organizational Justice

5.1 Introduction

The previous chapters reviewed the key literature that is brought together in the form of Study 1, namely organizational justice, Brunswik's theory of representative design and a policy capturing methodology. These will be developed further in the empirical study presented in this chapter. Study 1 brings a new methodological approach to organizational justice and does so in the context of performance appraisals. In doing so, Study 1 provides new and relevant insights for both practitioners involved in performance appraisals, and for justice research.

Study 1, uses a policy capturing methodology to identify the relative importance of individual justice antecedents in the formation of an overall justice judgment, and in doing so seeks to explain more about the decision making process behind statements such as "that's not fair!".

The format of this chapter is as follows. Performance appraisals are first introduced as the context in which I will apply new approaches to justice research and investigate the research questions. Section 5.3 introduces the research questions, and 5.4 discusses the methodology. Starting with the formation of a new fit-for-purpose shorter scale (section 5.4.1) I then collected naturally occurring combinations of cues through sampling situations (section 5.4.2), before sampling participants (section 5.4.3) and collecting their responses. The results of the study are then presented and discussed (section 5.5 and 5.6). Limitations of this study are covered in section 5.7 followed by the implications for both practice and research (sections 5.8 and 5.9).

5.2 Performance Appraisals

This research seeks to explore the weighting of individual justice antecedents in the formation of an overall justice judgment. Moreover it seeks to do so whilst adhering to the theory of representative design. Performance appraisals are the context that I have chosen in which to explore these.

Performance appraisals are an important tool for organizations. Performance appraisals are used by organizations to identify areas for future development, of training needs or resource needs of employees and their growth within the organization. The chance to identify employee's

needs and future objectives and have the opportunity for a 'free flowing' discussion (Bouskila-Yam and Kluger, 2011) with one's supervisor can be motivating for an employee, and thus if done well, performance appraisals can have motivational properties and can build trust in top management (Mayer and David, 1999).

Performance appraisals can also be used to measure the previous and present performance of employees which can form the basis for employee rewards such as a pay rise or promotion. Organizations can also use performance appraisals to justify the employment of an individual and determine what changes are needed, if any, to the position or its responsibilities.

From an employee perspective, performance appraisals, and more specifically their perceived fairness, have been shown to have a significant effect upon future performance, trust, commitment (Colquitt *et al.*, 2001, Heslin and VandeWalle, 2009), anxiety and depression (Folger and Cropanzano, 1998) for the appraisee. As perceptions of unfairness can be damaging for individuals and organizations, it is important for the appraiser to minimize, or even avoid, these adverse effects through an enhanced understanding of how fairness judgments of performance appraisals are made.

A focus on organizational justice within the context of performance appraisals is not new. Cawley and colleagues showed justice perceptions to be integral to a performance appraisal stating that it represents "both an antecedent and a consequence of employee reactions" (1998; 627). Performance appraisals can illicit feelings of both justice and injustice and thus represent a salient context for the exploration of justice issues.

Past research has demonstrated that organizational justice perceptions matter in the context of performance appraisals for more than just acceptance of the appraisal process (Dipboye and Pontbriand, 1981). The appraisal processes has "implications for individual reward allocations" and "justice perceptions in this context are especially salient" (Erdogan, 2002; 556). Erdogan (2002) continues to say that for this reason it is not unsurprising that individuals care about receiving a fair appraisal.

Performance appraisals are an important context in which to investigate the relative weight of multiple criteria of justice judgments (as suggested by Folger *et al.*, 1992). This is achieved with the use of a method that has rarely been used to study organizational justice, but which is remarkably well suited for this purpose. Using representative design and policy capturing, which were introduced in chapter 3 and 4 respectively, I shall investigate the overall

fairness of performance appraisals using a set of justice antecedents in realistic, naturally occurring configurations.

5.3 Research Questions

In chapter 2, existing organizational justice research is shown to lack an objective measure of overall justice. In addition there exists no comprehensive research identifying the role of individual justice antecedents in the formation of an overall justice judgment. To address this issue the following research question is posed in the context of performance appraisals:

1) What is the relative importance of each antecedent of justice in determining the overall feeling of justice?

The correlation between a Judge's objective cue use policy (relative cue weights according to regression) and their subjectively described manner of cue utilization acts as "an indicant of the Judge's insight into his own policy" (Slovic and Lichtenstein, 1971). Existing research has questioned an individual's ability to accurately report when reflecting upon how they make decisions, or reach judgments. Therefore, an objective measure of organizational justice is important as self-reported decision making processes may be inaccurate. The second question posed by this research is thus:

2) How much insight do people have into their own mental models?

With knowledge of how overall justice judgments are formed it is necessary to address whether processes of decision making are universal across individuals. The ability to generalize results, even when the research design observes a representative design, is contingent upon the extent to which decision making processes are prevalent between individuals. In light of this, the third research question asks:

3) Do individuals make justice judgments in similar ways? (i.e., is there social agreement between individuals in decision making?)

As these questions are exploratory no further hypotheses are posed at this stage. This study has multiple purposes; a) to determine how individual justice antecedents are combined and weighed in making an overall judgment, b) to apply and demonstrate the use of representative design in organizational justice research, c) to explore both within- and between-individual justice judgments.

In answering the above questions, a representative design is achieved by sampling on two dimensions; the participants and the situations. Situations are sampled by drawing on a set of real world experiences of performance appraisals by administrative staff in a university, and participants are chosen who are representative of the situation, cues and stimuli presented to them.

5.4 Method

A policy capturing study, as previously discussed in chapter 4, is adopted as the most appropriate methodology for answering the above research questions. Through policy capturing it is possible to infer an individual's decision "policy" using regression analysis, which describes the relationship between the overall judgment and the individual items or cues that are used in building that judgment. The "policy" derived for an individual refers to how cues are weighted in terms of their contribution to the overall judgment (Cooksey, 1996b) and thus reflects the underlying cognitive processes used by that individual. For example, we know that some of the important cues used to form an overall justice judgment are that the outputs (outcomes) are equal to the inputs of an individual (Adams, 1965) and the adherence of rules which determine the allocation process (Leventhal, 1980).

In order to comply with representative design and policy capturing techniques it is necessary to present the participants who make the judgments with information which is representative of natural experiences. One means of achieving this is to sample actual performance appraisal experiences, and in doing so present information to a participant that is derived from a real situation. Collection of performance appraisal situations as experienced by a group of 'Raters' means that situations are 'at least realistic', even though the truth behind their responses cannot be guaranteed to fully reflect their actual experience. However, there is no reason to presume the Raters did tamper with their responses as they participated voluntarily and

anonymously and all responses were confidential. The process of collecting naturally occurring profiles will be discussed shortly.

This research was conducted in three stages. In Stage I a 10 item organizational justice scale was developed, based on the scale by Colquitt . In Stage II, a sample of actual performance appraisal experiences were collected from university administrators in the UK (*n*=56). Participants completed the 10 item justice scale with reference to their most recent performance appraisal experience, and the resulting experience profiles were compiled into a profile booklet. In Stage III, profile booklets created in Stage II were given to a further 12 university administrators who became the Judges of the situations collected. Judges were asked to make overall justice judgments for each of the profiles (situations) in the booklet. Policy capturing analysis was then conducted on these overall judgments. In the following three sections, each of these stages is explained in more detail.

5.4.1 Scale Development

In compliance with representative design, sampling was conducted on both the participants and the situations used. Therefore the situations used needed to be relevant for the participants and this required the collection of realistic justice situations, in which the cues are relevant and presented in naturally occurring configurations.

Study 1 required a set of cues that are important to individuals when making overall justice judgments about performance appraisal experiences. In this study, the number of performance appraisal experiences is the number of profiles in the booklet, and the number of justice antecedents or questions within each profile is the number of cues. In policy capturing a balance must be found between the inclusion of relevant cues and keeping the number of cues to a minimum (Stewart, 1988).

Cooksey (1996b) advises a ratio of 5:1 between the number of profiles (situations) and the number of cues, and thus a 10 item scale would require a profile booklet of at least 50 pages, or situations. Similarly, in order to avoid fatigue of respondents, policy capturing best practice recommends (see policy-capturing discussion, section 4.3.1) that 50-60 profiles should be used in a profile booklet to be completed in one sitting. The use of Colquitt's (2001) full 20 item organizational justice scale comprising the four dimensions of justice was therefore not feasible given that it would require the use of 100 plus profiles, and when giving consideration to the

amount of time the Judges would realistically be expected to spend on completion. For these reasons it was therefore necessary to devise a fit-for-purpose shorter justice scale to be used in this study. Scale development and confirmation is not the goal of this study, rather the identification of items that can be used to collect a sample of realistic, naturally occurring, situations to enable a representative policy capturing design to be followed. Next, the steps taken to identify the cues used in this study are presented, starting with a discussion of the appropriateness of using Colquitt's (2001) scale.

5.4.1.1 The Colquitt Justice Scale

Colquitt's (2001) measure of organizational justice was chosen as the starting point for the development of a useable scale that was fit-for-purpose. Colquitt's scale uses the widest dimensionality of justice, by drawing on all four dimensions of justice and was adopted for several reasons.

Colquitt's scale was developed using the seminal work by Thibaut & Walker (1975), Leventhal (1976, 1980), Bies & Moag (1986) and Shapiro *et al.* (1994) drawing on the four justice dimensions. The original scale includes the items as shown in table 5.1, which is taken directly from Colquitt's seminal paper (2001; 389).

Measure Item	Source of which item is based
Procedural Justice	
The following items refer to the procedures used to arrive at your (outcome). To what extent:	(Thibaut and Walker, 1975)
Have you been able to express your views and feelings during those procedures?	(Thibaut and Walker, 1975)
Have you had influence over the (outcome) arrived at by those procedures?	(Leventhal, 1980)
Have those procedures been applied consistently?	(Leventhal, 1980)
Have those procedures been free of bias?	(Leventhal, 1980)
Have those procedures been based on accurate information?	(Leventhal, 1980)
Have you been able to appeal the (outcome) arrived at by those procedures?	(Leventhal, 1980)
Have those procedures upheld ethical and moral standards?	(Leventhal, 1980)
Distributive Justice	
The following items refer to your (outcome). To what extent:	
Does your (outcome) reflect the effort you have put into your work?	(Leventhal, 1976)
Is your (outcome) appropriate for the work you have completed?	(Leventhal, 1976)
Does your (outcome) reflect what you have contributed to the organization?	(Leventhal, 1976)
Is your (outcome) justified, given your performance?	(Leventhal, 1976)
Interpersonal Justice	
The following items refer to (the authority figure who enacted the procedure). To what extent:	
Has (he/she) treated you in a polite manner?	(Bies and Moag, 1986)
Has (he/she) treated you with dignity?	(Bies and Moag, 1986)
Has (he/she) treated you with respect?	(Bies and Moag, 1986)
Has (he/she) refrained from improper remarks or comments?	(Bies and Moag, 1986)
Informational Justice	
The following items refer to (the authority figure who enacted the procedure). To what extent:	
Has (he/she) been candid in (his/her) communications with you?	(Bies and Moag, 1986)
Has (he/she) explained the procedures thoroughly?	(Bies and Moag, 1986)
Were (his/her) explanations regarding the procedures reasonable?	(Shapiro *et al.*, 1994)
Has (he/she) communicated details in a timely manner?	(Shapiro *et al.*, 1994)
Has (he/she) seemed to tailor (his/her) communications to individuals' specific needs?	(Shapiro *et al.*, 1994)

Table 5.1: Colquitt's 2001 Justice Scale

The above 20 item scale was tested by Colquitt on two samples, first with a student sample and then with a group of employees from two automobile manufacturing plants. In both

samples, a four factor model was significantly better fit than a 3-, 2- or 1 factor model and thus each dimension was worthy of being treated as distinct in capturing organizational justice (Colquitt, 2001).

The adaptable nature of this scale allows it to be a universal measure of organizational justice across contexts and individuals. By changing parts of each question the scale can be tailored to any situation (Colquitt, 2001). The adaptability of this scale enabled the items to be tailored to an educational context for Colquitt's student sample and a field setting for the employees, and means it can also be adapted to the context of performance appraisals for the purpose of this study.

As an indirect measure of justice, this scale enables information to be gained surrounding the different antecedents of justice and can be used alongside an overall justice judgment, which forms the dependent variable. Using an indirect measure enables the identification of which "fairness criteria are favorable or unfavorable" (Colquitt, 2001; 388). When making justice decisions we know that individuals draw on and distinguish between the dimensions of justice (Colquitt, 2001) and policy capturing techniques enable insight into the weights assigned to these different dimensions and their antecedents (cues) when reaching an overall justice judgment.

5.4.1.2 A Shorter Fit-for-Purpose Scale

A number of steps were followed in the development of a shorter fit-for-purpose scale. In light of the representative design adopted by this study, and the processes used to develop the shorter scale it is not believed that a longer scale would have extracted appreciably more information for the purposes of this study. Moreover, the resulting fit-for-purpose scale ensured that the chosen items would be meaningful in the context of performance appraisals, rather than just changing the parenthesis of the original items. The process by which the 10 scale items were selected is described next.

Starting with the 20 item Colquitt scale a group of MBA students (n=42) were asked to complete a 10 minute task during a class break. On a horizontal line ranging from "very unfair" to "very fair" each participant was asked to judge the overall fairness of their most recent performance appraisal. The performance appraisal represents a salient situation for MBA students which made this sample both relevant and accessible and also provided a sample which included appraisal experiences across multiple employers. Having made this overall assessment

each individual then completed Colquitt's (2001) original 20 item scale which was tailored to the 'most recent performance appraisal experience'. Subsequently, students were asked whether any of the items had been unclear or whether they seemed irrelevant in this context. Notable feedback included comments about wording and phrasing of questions. For example, it was found that the judgment of whether an appraisal had been "moral" (one of the original procedural justice items) was difficult to answer and not applicable in this case. Therefore this item was removed from the scale. The opportunity to appeal item ("have you been able to appeal the outcome arrived at by those procedures") was also the subject of debate. Participants felt that this item was only relevant if one wanted to or needed to appeal the appraisal outcomes, which is often not the case. Again, this item was dropped as it was deemed inappropriate in this context. A regression analysis with these profiles also gave some tentative suggestions of salient items. Where in doubt, items were chosen which more strongly related to an overall justice judgment.

In a second step, items were excluded or combined through internal analysis. For example, the outcome and process control items were combined into an item that read "Did the appraisal procedure take your views and perspectives into account?", and some distributive justice items were removed as there is a strong overlap between them.

In the final stage to determine the 10 items to be used in the shorter scale, 23 executive education students (a second sample with performance appraisal experience) were asked to write down the three most important issues they believed made the performance appraisal process fair. This list was then cross-checked against the proposed 10 item scale to ensure that the most frequently stated items were reflected in the final scale.

This scale reduction process, which identified the most salient cues for the fairness of performance appraisals, resulted in a 10 item fit-for-purpose scale. This shorter scale included 8 items which were derived from the aforementioned 20 item scale; two for each of the four justice dimensions (i.e., distributive, procedural, interpersonal and informational), and two additional items.

The resulting eight items of organizational justice (two for each dimension) are shown in table 5.2. The two additional measures are shown in table 5.3. The short item reference used during the analysis section of this chapter, when referring to specific antecedents, is shown alongside each item. For example, 'explanations' refers to the item which asked whether an individual received reasonable explanations regarding the appraisal process.

The resulting eight items of organizational justice in the fit-for-purpose scale are as follows:

Measure item	Short item reference
Distributive Justice	
Did the outcomes of your appraisal reflect the effort you put into your work?	Effort
Did the outcomes of your appraisal reflect the quality of your work?	Quality
Procedural Justice	
Did the appraisal procedures take your views and perspectives into account?	Views
Was the information used as part of the appraisal procedure accurate?	Infacc
Interpersonal Justice	
Were you treated with dignity and respect throughout the appraisal process?	Dignity
Did those involved in the appraisal process refrain from improper remarks or comments towards you?	Remarks
Informational Justice	
Did you receive reasonable explanations regarding the appraisal process?	Explanations
Were you provided with any information you needed in good time?	Inftime

Table 5.2: Shorter scale justice measures

The 10 item fit-for-purpose scale includes two items which are not considered measures of fairness, namely, "overall, were you pleased with the outcome of your appraisal?" and "in general, do you like working for your employer?" (table 5.3). These two items were included as they may impact upon perceptions of fairness. Outcome favorability and general attitude towards the fairness evaluation target, in this case, judgments about the employer, may be additional cues that affect overall fairness judgments (Hollensbe *et al.*, 2008). Individuals have been shown to react more strongly to a negative event (Colquitt *et al.*, 2001), and favorable events are typically considered to be more 'fair' (Cropanzano *et al.*, 2001a). Whilst outcome fairness and outcome

favorability have sometimes been confounded in research they have been confirmed as distinct constructs (Skitka *et al.*, 2003) and are thus considered as two separate items.

To justify the inclusion of these two additional items in the scale moderation tests were conducted to test for the moderating effects of these two non-justice items on the relationship between the eight justice items and perceptions of overall justice. If the moderation was significant then this would imply that their inclusion was problematic, as rather than being independent items there is an individual difference in justice perceptions for the 8 items dependent on being pleased with the outcome or liking one's employer. However, this was not the case. The two additional items do not moderate the relationship between the justice items and overall perceptions of justice (p=>0.05), and therefore it is acceptable to include them in the fit-for-purpose scale. The inclusion of these non-justice items is empirically valid for this sample.

Measure item	Short item reference
Outcome Favorability	
Overall, were you pleased with the outcome of your appraisal?	Pleased
General Satisfaction	
In general, do you like working for your employer?	Likeworking

Table 5.3: Shorter scale additional measures

Having completed the above steps the resulting 10 item scale was identified as representing the salient items in the context of judging the fairness of a performance appraisal.

5.4.2 Event Sampling ---- The Raters

With the 10 item organizational justice scale in place, a group of 56 Raters completed a four page survey. On the first page the study was introduced and participants were asked to rate the overall fairness of their most recent performance appraisal experience. This was done by making a cross ("X") on a graphic rating scale ranging from "very unfair" to "very fair". Participants were asked to take a moment to consider all aspects of their appraisal experience from completing evaluations and training needs, informal discussions, one-on-one formal meetings with the appraiser, and appraisal report and feedback. Participants were then asked to what extent they agreed with 10 filler questions before reaching the main part of the survey. In

this section individual's reflected on their appraisal experience by answering the extent of their agreement with the 10 scale items. Each item was answered on a 7 point Likert-scale ranging from 1 ("To a very small extent") to 7 ("To a very large extent"). Finally, individuals were asked to record up to three items of information they felt was missing and also to list the three things which they believe make a performance appraisal process fair.

56 Administrative staff from a UK university acted as Raters. Whilst each was employed by the same organization and was appraised under the same guidelines, the appraiser (or line manager) varied within the sample. Raters completed voluntarily and all responses were anonymous and confidential so that they could in no way be traced back to the individual. Having been handed the survey in an envelope, individuals who wished to participate were asked to return the envelope to a sealed box. The extent of anonymity meant that no demographic data was collected from the Raters. Whilst this means it is not possible to establish how representative each Rater is of the population of administrative staff within the university, this could have contributed to the high response rate achieved. What is important was that all Raters had actual experience with the performance appraisal process at the University, and all had comparative administrative roles (non-managerial).

Reponses from Raters to the 10 questions formed the content of the profile booklet. The profile booklet was collated using the collected real world naturally occurring ratings of items which described the actual experiences of Raters. In the booklet, Raters responses were shown as a bold number slightly larger in font than the other 7 point Likert-scale numbers. Importantly, the booklet did not contain any overall fairness judgments made by the Raters. Each profile booklet contained an introduction and instruction page, 2 practice pages, 56 profile pages and then ended with 3 repeated profiles as a test for reliability.

The resultant 10 items had a coefficient alpha (α) of 0.92 (n=56) and as a measure of internal consistency this suggests the items were, generally, highly correlated. Table 5.4 shows the correlation matrix between the 10 items. The numbers in bold show the correlation for the items measuring the dimensions of justice, for example, effort and quality which are used as a measure of distributive justice have a correlation of 0.79. The two items for each of the justice dimensions are highly correlated. Table 5.4 also shows other cues to be highly correlated, for example effort and views (r=.79), infacc and pleased (r=.79), and views and pleased (r=.80). However, it is expected that the presence of information accuracy and the ability to express one's

own views would be related to satisfaction with the overall appraisal (being pleased). Whilst there are a few unexpected high correlations amongst the 10 items, the naturally occurring correlations are representative of realistic relationships between the cues and are thus inherently more representative than any experimenter constructed combinations of cues.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1) Effort	..	**.79****	.79**	.67**	.50**	.52**	.61**	.58**	.82**	.37**
2) Quality		..	.59**	.62**	.43**	.35**	.50**	.45**	.64**	.20
3) Views			..	**.71****	.57**	.57**	.61**	.64**	.80**	.50**
4) Infacc				..	.58**	.47**	.69**	.65**	.79**	.27*
5) Dignity					..	**.74****	.62**	.56**	.58**	.28*
6) Remarks						..	.56**	.46**	.49**	.34*
7) Explanations							..	**.67****	.65**	.29*
8) Inftime								..	.63**	.25
9) Pleased									..	.45**
10) Like working										..

*Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 5.4: Intercorrelation of 10 cues (N=56)

Table 5.5 shows the descriptive information collected from the Raters which formed the profile pages within the profile booklet. All items were measured on a 7 point Likert-scale, whilst overall fairness was able to vary on a rating line between 0 and 222 millimetres.

Item	Range	Min.	Max.	Mean
Effort	6	1	7	4.59
Quality	6	1	7	4.66
Views	6	1	7	4.95
Information accuracy	5	2	7	5.12
Dignity	5	2	7	5.96
Remarks	5	2	7	6.30
Explanations	5	2	7	5.41
Information in good time	6	1	7	5.16
Pleased	6	1	7	5.09
Like working	5	2	7	5.39
Overall Fairness	215	7	222	155.54

Table 5.5: Rater descriptive information

In reporting their own experience, Raters provided naturally occurring combinations across the range of responses available. Perceived overall fairness amongst the Raters with regards to their own experiences was diverse, ranging from 7 to 222 on a scale with a maximum of 222. It was not just those who felt strongly one way or the other (fair or unfair) who responded to the survey. Therefore experiences shown to the Judges in the next step should be expected to produce variation amongst judgments of overall fairness.

5.4.3 Policy Capturing ---- The Judges

In the final and main stage of the study, the profile booklet was presented to 12 Judges. In order to achieve a representative design, each judge was also a member of administrative staff within the same university. This was important to ensure that the Judges and Raters were all appraised under the same guidelines and therefore could be expected to have the same understanding of the specific performance appraisal context, have a similar understanding of the items used, and that these items may be equally salient to them. The allocation of Judges and Raters took place at the beginning of the study with administrative staff agreeing to take part being divided amongst the two roles. Judges completed voluntarily, but were thanked for their time and participation with a gift voucher. All responses remained confidential and were

analyzed as Judge 1 through to Judge 12. Whilst this is a small sample size, this first study focuses on within-individual analyses. That is, the amount of situations appraised by each judge is more important for this analysis than the number of Judges. This study, as the first in a set of two, is used to identify salient cues, to collect naturally occurring situations from the Raters and to apply representative design to a policy capturing study. Study 2 is an extension of Study 1 and will include both between and within-individual analyses, offering further insight into the process of reaching an overall justice judgment.

After being presented with a booklet, each Judge was asked to work their way through it individually. Having read the instruction page, Judges were instructed to complete two practice pages and then pause to clarify their understanding and raise any issues or concerns as appropriate with the researcher. The role of the Judge was to treat each profile as an anonymous colleague's individual appraisal experience and in light of the information provided on each profile to make an overall fairness judgment for each situation. Judges were able to indicate their fairness perception across a scale ranging from "totally unfair" to "totally fair" by making a cross ("X") on a graphic rating scale located at the bottom of each page under the 10 cues. Rating scales were adopted to obtain an objective degree of justice for each situation in order to calculate the weight of each independent variable (cue) on the dependent variable (overall justice judgment). They were also easy for the Judges to comprehend and results are quantifiable for analysis.

Three repeated profiles were included at the end of the profile booklet. These were selected at random from the situations, and the Judges were unaware that these were repetitions of earlier profiles they had judged. Whilst not advised to do so, some Judges did look back through the booklet in order to monitor their own consistency. The researcher was present during all profile booklet completions in order to be available to answer any concerns and to oversee the process. All profile data was fully anonymous in order to avoid bias that could result from emotional attachment to, or favoritism of, individual colleagues.

Upon completion of the main task, Judges were asked to indicate what rule or process they thought they had used when making their overall fairness ratings by reflecting on how they had formed their judgments. This formed a Judge's subjective decision making policy. Judges were first asked to indicate their subjective rating policy by rating the absolute importance of each cue, in terms of forming their overall justice judgment, using a 7 point Likert-scale ranging

from ‘very important’ to ‘very unimportant’. Second, the Judges were asked to rank the cues in perceived order of importance by assigning the numbers 1 through 10 to each of the 10 cues (using each number once), and this formed an individual’s subjective ranked policy. Subjective rank ordering of cues has been used in previous research by Feldman and Arnold (1978) and the subjective rating of cues was used to imitate the presentation of cues in the profile booklet. These two measures constituted a Judge’s subjective policy, which are later compared against the objective policy of each Judge (as derived through statistical regression) as a measure of self-insight, to assess individual’s awareness of their own mental processes.

The final role for the Judges was to complete a three-question online survey which measures cognitive control, called the cognitive reflection test (CRT). This test was designed as a measure of cognitive ability and can distinguish between those individuals who make quick decisions based on intuition and those who make slower and more reflective decisions (Frederick, 2005). This short test was taken from Frederick’s (2005) paper on ‘cognitive reflection and decision making’ and included the following questions:

1) A bat and a ball cost £1.10 in total. The bat costs £1.00 more than the ball. How much does the ball cost?
2) If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?
3) In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

Frederick positioned his cognitive reflection test as a measure of cognitive reflection, or “the ability or disposition to resist reporting the response that first comes to mind” (2005; 35), and not as a measure of intelligence. Toplak and colleagues have recently distinguished cognitive ability from intelligence and find that CRT is a measure of the depth of processing, whilst intelligence is about individual’s computational power. Furthermore, they find that “CRT measures properties relevant to rational thinking that go beyond those measured on intelligence tests” (2011; 6). However, Frederick (2005) did find medium significant correlations between his CRT and other measures of intelligence, for example college entrance exams and employer

measures of intellectual ability. The CRT cannot be considered a substitute for intelligence, but rather a measure of cognitive control. Nonetheless, this test is one way in which individuals can be differentiated in analysis as "respondents who score differently on one CRT make *different* choices" (Frederick, 2005; 41).

The three problems in the CRT, test the cognitive ability of individuals to answer questions that in hindsight are easy, but require attention and reflection in order to overcome initial (often wrong) intuitive answers. A correct answer "often requires the suppression of an erroneous answer that springs "impulsively" to mind" (Frederick, 2005; 27). For a three item test which is quick to administer "its predictive validity equals or exceeds other cognitive tests that involve up to 215 items and take up to 3 ½ hours to complete" (Frederick, 2005; 37).

Table 5.6 shows the descriptive statistics over the profile booklet for Judges overall fairness judgments. Most Judges utilized almost the full range of the overall fairness judgment across their profile booklet (avg. range = 198 out of the full possible range of 222).

Judge	Min. (0)	Max. (222)	Range
J1	6	222	216
J2	9	222	213
J3	3	222	219
J4	22	218	196
J5	39	203	164
J6	14	222	208
J7	34	192	158
J8	0	222	222
J9	19	214	195
J10	12	215	203
J11	11	213	202
J12	21	202	181

Table 5.6: Descriptive overall fairness judgment by Judge

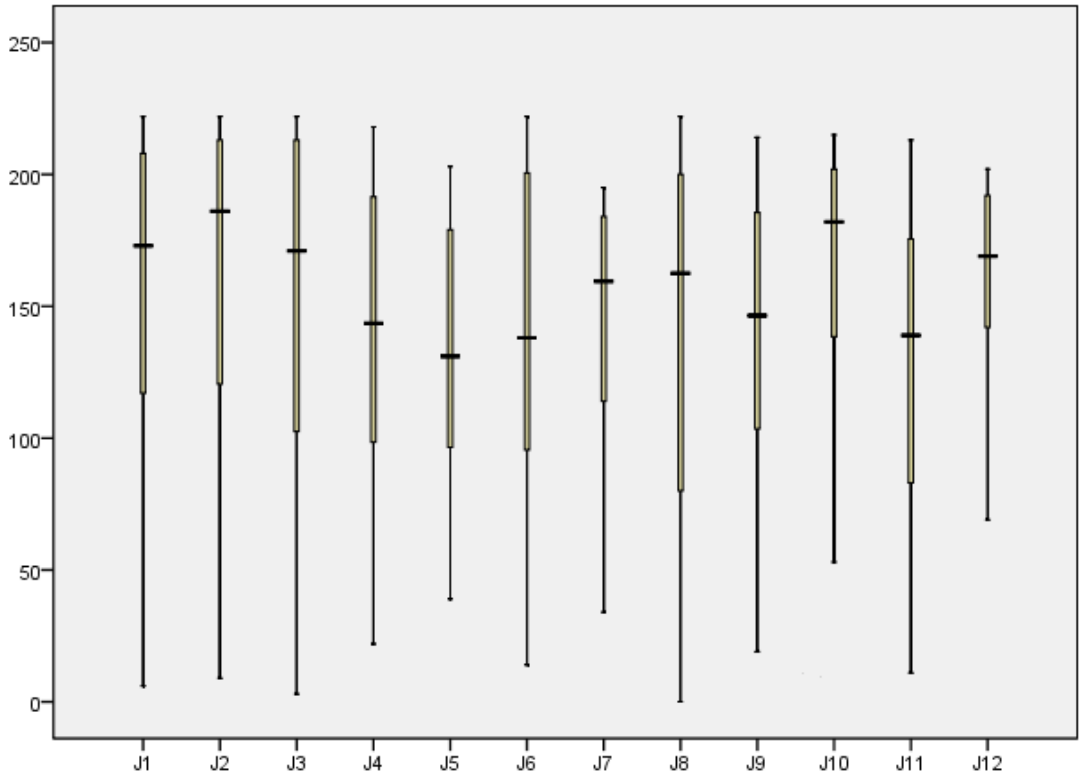


Figure 5.1: Boxplot of Judge Overall Judgment (Range 0 -222) by Judge

Figure 5.1 illustrates the distribution of overall judgments of appraisal fairness made by each Judge throughout their profile booklet, with most Judges showing a large variation in overall fairness judgments across the profile booklet.

A graphical comparison of overall justice judgments for the 12 Judges and the Raters is shown in figure 5.2. The first-party Raters' overall justice judgment is shown by the line, and the crosses on the vertical axis represent the Judges' rating of the same profile.

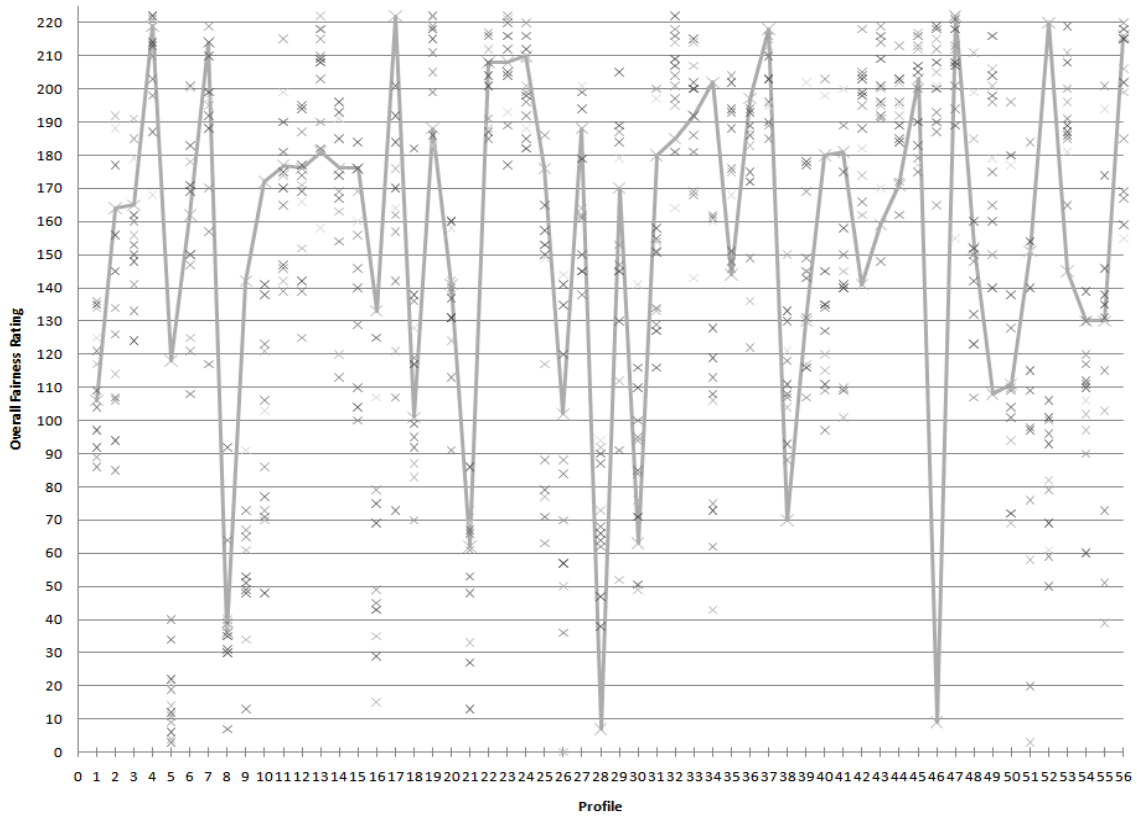


Figure 5.2: A comparison of Judge versus Rater perception of overall justice

There are visible differences between the overall judgments of the Raters and the Judges for the same situation. In this thesis the term Judge is equivalent to Skarlicki and Kulik's term 'third-party', which they use to refer to "individuals who form impressions of organizational justice often based upon an indirect and vicarious experience of an organizational event" (2005; 184). There are mixed results regarding the extent to which third-party fairness judgments and responses differ from those who experienced an event first-hand. Third-party (Judges') responses have been described as similar, but less intense, to those who experience it first-hand (e.g. Lind, Kray & Thompson, 1998), but more recently they have been shown to, in some cases "parallel those of the victim, and in other case, their responses will diverge" (Skarlicki and Kulik, 2005; 187).

The differences between Raters and Judges' perceptions of overall justice in this research may be present for several reasons. First, this may be explained through differences between the amounts of information available on which a judgment is based. Raters, who have experienced the actual performance appraisal, will have a wider range of antecedents driving their judgments,

than Judges, who were limited to information on 10 antecedents of an appraisal. Second, the Judges' decision making is based on information gathered through an indirect means (Skarlicki and Kulik, 2005) and are based on second-hand accounts. Therefore judgments may not be formed on objective information. In this research we ask the Judge to assume the information they are viewing is objectively true (see section 7.3.3).

Third, disparity between Judges and Raters could also be attributed to random differences between people in making justice judgments, such as personality differences or levels of identification with the organization. As evident from differences between Judges' responses when making judgments on the same information, the threshold between a fair and unfair situation is different between individuals. Study 2 (Chapter 7) uses measures of individual difference, including two personality measures and a measure of cognitive control, to explore differences in how individuals form perceptions of overall justice.

Lastly, third-party individuals (Judges) are more likely to attribute blame to the victim (Rater) than the event or entity (performance appraisal or the appraiser) (Skarlicki and Kulik, 2005) and therefore their perceptions of the fairness of an appraisal may differ. However, we do know that both the first-party and third-party assess situations according to distributive, procedural and interactional facets of justice (Skarlicki and Kulik, 2005).

Having followed a rigorous three stage development and methodology process the conclusion is that it is possible; (a) to determine the relative importance of justice antecedents used by Judges in reaching their overall justice judgments, (b) to determine how well individuals are able to describe their own mental processes used in forming their judgments, and (c) to assess whether individuals form a consensual agreement about justice judgments by asking whether there is social agreement between the Judges?

5.5 Analysis

In order to infer the policy used by an individual in reaching overall justice judgments, regression analysis was used. Regression analysis makes it possible to determine the weightings assigned to each cue by determining how well a set of independent variables (IVs) can explain variance in the dependent variable (DV). The overall judgments made by a Judge throughout the profile booklet are the dependent variables, whilst the information they were presented with, in the form of the 10 cues, are the independent variables. In this type of analysis each Judge is

analysed individually, that is within-person, and so the results obtained refer only to the policy, or decision making processes, used by one individual.

Table 5.7 shows the resulting R^2, which indicates the reliability of each Judge's cue policy, and adjusted R^2 for each Judge, which is a more accurate goodness-of-fit measure when smaller sample sizes are used; there is little difference between these two values. In addition the standardized betas associated with each cue and those that are statistically significant at the $p=<0.05$ level are identified.

Judge	R^2	Adj R^2	Effort	Quality	Views	Infacc	Dignity	Remarks	Explanations	Inftime	Pleased	Like working
J1	0.95	0.94	0.132	0.035	0.041	0.189*	-0.012	-0.035	0.219*	0.014	0.487*	0.021
J2	0.85	0.81	-0.005	0.025	0.337*	0.364*	0.093	-0.035	0.180	0.177	-0.082	0.031
J3	0.89	0.87	0.132	0.191*	0.365*	0.213*	0.100	-0.123	0.058	-0.089	0.172	0.025
J4	0.86	0.83	0.259	0.071	0.515*	0.238*	-0.077	-0.046	0.085	-0.005	-0.082	0.082
J5	0.87	0.84	-0.090	0.495*	0.325*	0.225*	0.105	-0.091	0.057	0.016	0.037	0.002
J6	0.93	0.92	0.155	0.367*	0.415*	0.145	-0.014	-0.070	0.022	0.126*	-0.051	0.009
J7	0.70	0.63	0.025	0.141	0.150	0.195	-0.108	0.037	0.106	0.372*	-0.007	0.134
J8	0.92	0.90	0.324*	0.556*	0.113	-0.018	-0.044	0.088	-0.011	0.031	0.059	-0.094
J9	0.86	0.83	0.235	0.355*	0.222	0.084	-0.107	-0.006	0.002	0.197*	0.108	-0.091
J10	0.92	0.90	0.086	0.124	-0.024	0.392*	-0.103	0.009	0.163*	0.119	0.324*	-0.031
J11	0.91	0.89	0.293*	0.328*	0.188*	0.157	0.071	-0.112	0.049	0.054	0.026	0.055
J12**	0.64	0.56	-0.303	0.048	0.236	0.336	-0.031	0.064	0.080	0.172	0.353	-0.167

* Correlation is significant at the 0.05 level (2-tailed)

** No statistically significant cues at p=<0.05

Table 5.7: R^2 and standardized beta weights

Squared multiple correlations (R^2) between the cues and the overall judgment were strong, ranging from 0.64 to 0.95 with an average of 0.86, with larger R^2 values signifying stronger within-individual consistency in using the cues to reach an overall justice judgment. Ten out of the 12 Judges had an R^2 above 0.85, meaning it is possible to explain at least 85% of the variance in judgment made by these Judges through the cues. Such high values may be indicative of systematic cue use by Judges, and lend support to the procedures followed to select relevant cues. Half of the Judges used a three cue policy, that is, their regressions returned three cues which were statistically significant. A two cue policy was used by four Judges, and one Judge's policy was strongly reliant on only one cue. Notably, Judge 12 returned no statistically significant cues, and had the lowest R^2 value and no clearly identifiable cue use policy. Judge 12 had the lowest internal consistency of cue utilization at 64%.

With regards to the four justice dimensions, it is notable that there were no significant cues relating to the interpersonal justice dimensions (treated with dignity and respect, and refraining from improper remarks or comments).

5.5.1 Relative cue importance

The importance of individual cues used by individual Judges in their decision making processes is calculated using a weighting formula supported by Cooksey (1996b). Whilst the standardized beta weights offer an indication of the salience of individual cues, a more heuristic approach is to look at relative cue weightings. This usefulness index (equation 5.1) can establish individual cue importance even under conditions of high cue intercorrelations or multicollinearity (Cooksey, 1996b). This process allocates 100 points, or a percentage weighting across the number of cues, in this case 10. The resulting value signifies the salience of that cue used by an individual throughout the profile booklet in the process of making a judgment about overall fairness. The weights across the cues for one individual can be described as their decision making policy.

$$sr_i^2 = \frac{t_i^2}{m-k-1}\left(1 - R^2_{y_s \cdot x_{1 \ldots k}}\right)$$

Equation 5.1: Calculating the usefulness index

The formula above is the usefulness index as shown in Cooksey (1996b) which is taken from Tabachnick and Fidell, (1996) and uses the standardized beta and other information taken directly from the earlier regressions. This equation is used to work out the unique R^2 that can be assigned to an 'ith' cue (any selected cue) by calculating the difference between a full regression, and a regression which is carried out minus the 'ith' cue (e.g., effort). Sr_i^2 shows the unique contribution made by each cue in the judgment process (Cooksey, 1996b), with 'm' referring to the total number of profiles in the booklet answered by the Judge (56), and 'k' refers to the number of cues (10).

Figure 5.3 provides a graphical illustration of the relative weighting of each of the 10 cues for the Judges collectively. The average relative weights, in order of importance, for each cue were quality (25.25%), views (19.61%), information accuracy (16.05%), information in good time (10.21%), pleased with overall outcome (9.10%), quality of effort (6.29%), explanations (5.22%), like working for employer (4.05%), treated with dignity and respect (2.28%) and refrained from improper remarks or comments (1.94%).

From figure 5.3 it is also possible to see how the weightings of cues divide amongst the 12 Judges. For example, the cue 'inftime' which relates to whether information was available to the apraisee in good time, was, amongst the 12 Judges, most salient to the Judge represented by the blue bar. On the other hand, 'dignity', that the apraisee was treated with dignity and respect during the appraisal process was not of particular salience to any individual Judge.

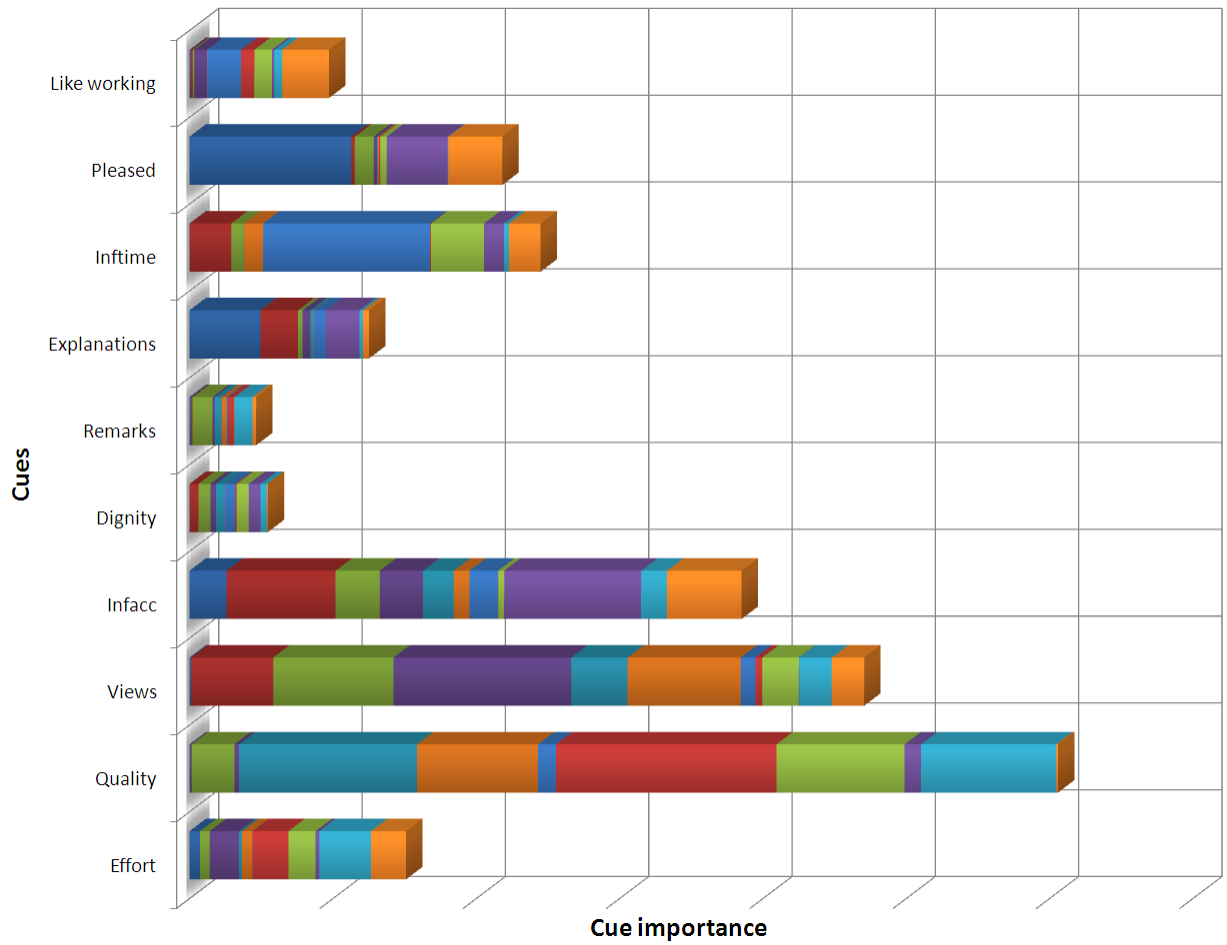


Figure 5.3: Average relative cue weightings for all 12 Judges

When categorized according to the justice dimensions, the underlying constructs of distributive and procedural justice were most important in reaching a judgment about the overall fairness of a performance appraisal. The results presented in figure 5.3 suggest that, collectively, the decision making process to derive at a perception of overall fairness is weighted in favor of whether the outcomes were satisfactory and whether the procedures followed were fair.

The relative weights assigned by each individual Judge across the cues (as derived through statistical regression) in reaching their overall decision is referred to as their objective policy. These policies are unique for each Judge (though multiple Judges may share the same policy). Graphical representation of the policies for each Judge are shown below in figure 5.5

Of course, cue importance may be influenced partly by the visible cues presented to each Judge. As shown in table 5.8 there is difference in mean and variance of the cues presented to the

Judges, and this could impact the sensitivity of Judges to those cues and could "confound any influence of cue importance" (Cooksey, 1996b; 155). Standardized betas are used in this analysis to enable "comparability of regression coefficients across variables (Aiman-Smith *et al.*, 2002; 407) and focus the analysis on standard scores measured in standard deviation units.

Cue	Mean	Variance
Remarks	6.30	1.09
Dignity	5.96	1.42
Infacc	5.13	1.89
Explanations	5.41	2.21
Like working	5.39	2.28
Inftime	5.16	2.68
Views	4.95	2.78
Pleased	5.09	2.85
Effort	4.59	3.56
Quality	4.66	3.83

Table 5.8: Cue mean and variance

Pooled standardized regression coefficients (as used by Zedeck and Kafry, 1977) show that, overall, for the 12 Judges, fairness judgments can be explained using a relatively small number of cues. In this manner, it is possible to ask which of the cues should be given the most attention by an appraiser if the appraisal is to be perceived as fair.

Figure 5.3 has shown that the most salient cues used by the Judges in reaching an overall justice judgment are quality, views, and information accuracy. Cumulatively, these three cues account for 60.9% in variance of overall judgment (see table 5.9). The addition of information being received in good time, and being pleased in general with the outcome of the appraisal increases the explanatory variance to just over 80%. This finding is not surprising given existing research which shows judgments to be made using a relatively small number of cues (Slovic and Lichtenstein, 1971, Taylor and Wilsted, 1974).

Cue	Pooled standardized regression coefficients	Cumulative regression coefficients (weights)
Quality	25.25	25.25
Views	19.61	44.86
Infacc	16.05	60.91
Inftime	10.21	71.12
Pleased	9.10	80.22
Effort	6.29	86.51
Explanation	5.22	91.73
Like working	4.05	95.79
Dignity	2.28	98.06
Remarks	1.94	100.00

Table 5.9: Pooled standardized regression coefficients for each cue

It is interesting that the two cues which measure interpersonal justice, or the treatment of the individual during an appraisal, add just 4.22% in variance to overall fairness judgments. At first glance, this would suggest that for the appraiser, treating the individual with dignity and respect does not largely affect the opinion of overall fairness given by the appraisee. One explanation for this result is that as the individuals who were being appraised (the Raters) were largely satisfied with their treatment, these issues were largely ignored by the Judges in making assessments of fairness. The cues for remarks and dignity had the highest mean scores at 6.30 and 5.96 out of 7 respectively (table 5.8). This issue is explored further in study 2 which allows closer identification of the process of using the cues in reaching a judgment, and also provides a comprehensive discussion of the variance associated with the interpersonal cues, and its affect on the decision making process.

Figure 5.3 visibly indicates unequal weighting of cues in decision making, yet justice research typically gives equal weighting across cues or survey items (e.g. Colquitt's (2001) justice scale). In a 10 question survey each item typically contributes 1/10th to an overall decision. However, one question is how well such equal weightings are capturing overall justice?

To determine whether equal (as assumed in traditional measures) or unequal (as calculated) weightings across the 10 cues is able to explain more of the variance in actual overall

judgments the regressions are repeated with an average equal regression weighting assigned to each cue. As shown in table 5.10, the R^2 of Judges when cues are equal is lower than when cues are weighted (unequal). This implies that unequal weighting of the 10 cues is a better predictor, that is, able to explain more variance in the overall judgment, than could equal cue weightings. Dawes statistic and paired-samples t-tests support that, for this sample, unequal weighting of cues is a better predictor of overall justice than equally weighted cues.

It is expected that unequal weights would be the superior weighting system as this method takes into account the choice preferences of individuals and thus reflects a better fit of that individual's policy. However, whilst they are superior for these Judges this may not be the case using a different sample (which may vary in culture, experience, or general intelligence, such as memory skills, for example).

Unequal weights are a better predictor for the reason that they are flexible to the individual differences in relative weights (weights which may also vary within-individual). Nonetheless, whilst it is acknowledged that a parsimonious scale for measuring justice perceptions is the ultimate goal for researchers, this research highlights differences in cue weights which can provide salient information about individual variances and areas for attention. As already shown, the contribution of some cues was negligible and thus the assignment of equal weights gives them more salience than they may actually deserve. For this sample of Judges the results demonstrate that unequal weights are the more superior method of weighting system as it takes into the account the choice preferences of individuals.

Judge	R^2 unequal	R^2 equal
J1	0.952	0.879
J2	0.846	0.773
J3	0.894	0.819
J4	0.863	0.772
J5	0.869	0.761
J6	0.932	0.833
J7	0.696	0.637
J8	0.915	0.698
J9	0.864	0.736
J10	0.917	0.811
J11	0.908	0.827
J12	0.641	0.496

Table 5.10: Results of equal versus unequal weightings of cues on R^2

In order to calculate an R^2-like statistic which "more accurately reflects the generalizability of the model" (Stevens, 2002; 101) the R^2 Press (predicted residual sum of squares) statistic was calculated for each Judge. This value explains the amount of variance that can be explained when one variable is removed at a time, that is, for each Judge for *n-1* observations, as used by leave-one-out cross-validation techniques. The Press statistic is computed by "fitting the model, repeatedly, leaving out an observation each time" (Mendez Mediavilla *et al.*, 2008; 1261) and offers a "true assessment of the validity or prediction capabilities of the regression model" (*Ibid.*; 1262).

The equation used is shown in equation 5.2, where PRESS is the sum of the squared deleted residuals:

$$R^2_{Press} = 1 - (PRESS) / \sum (y_i - \bar{y})^2$$

Equation 5.2: R^2 Press statistic

The results of the R^2_{Press} are shown alongside the R^2 and adjusted R^2 for each Judge in table 5.11:

Judge	R^2	Adj R^2	R^2_{Press}	$R^2 - R^2_{Press}$
J1	0.95	0.94	0.92	0.03
J2	0.85	0.81	0.75	0.10
J3	0.89	0.87	0.83	0.06
J4	0.86	0.83	0.77	0.09
J5	0.87	0.84	0.82	0.05
J6	0.93	0.92	0.89	0.04
J7	0.70	0.63	0.58	0.12
J8	0.92	0.90	0.84	0.08
J9	0.86	0.83	0.79	0.07
J10	0.92	0.90	0.87	0.05
J11	0.91	0.89	0.84	0.07
J12	0.64	0.56	0.51	0.13
Avg.	0.86	0.83	0.78	0.07
Min.	0.64	0.56	0.51	0.03
Max.	0.95	0.94	0.92	0.13

Table 5.11: R^2 Press statistic

This validation model permits the researcher to estimate "how well the regression equation will predict on an independent sample(s) of data" (Stevens, 2002; 96) and for this sample the average R^2_{Press} is 0.78 (range = 0.51 to 0.92). The R^2_{Press} remains high for all but two Judges, however, the variance of J7 and J12, at 58% and 51% respectively, retains some explanatory power.

The difference between the original R^2 and the R^2_{Press} statistic shows the predictive power of the 10 cues. For the 12 Judges, between 3% and 13% of the original mean variance of 86% is lost when predicting the value using leave-one-out techniques. There is an average loss of 7.4% across the sample which suggests that there remains good explanatory power in the model even after cross-validation with an average R^2_{Press} of 78%.

5.5.2 Order effects

To test whether the order in which the cues were presented affected overall judgments half of the Judges were administered the profile booklet in order 1, and the other half in order 2. The difference between the two booklets was the order in which the cues were presented, as shown in table 5.12.

Order 1	**Order 2**
DJ	INPJ
PJ	INFJ
INPJ	DJ
INFJ	PJ
Additional cues	Additional cues

Table 5.12: Cue order by booklet, by justice dimension

Figure 5.4 shows the cumulative importance (relative cue weightings) for Judges in order 1 and in order 2. Albeit a small sample, in both orders, the most important cues were quality, views and information accuracy. Agreement on the pattern of importance attributed to antecedents may suggest that these effects override any order effects, however, due to the small number of Judges it is not possible to ascertain how strongly Judges were affected by the order in which information was presented to them. The follow up study in chapter 7, with its larger sample size and process-tracing methodology, will be able to draw more conclusions about the effect of order on overall judgments of fairness.

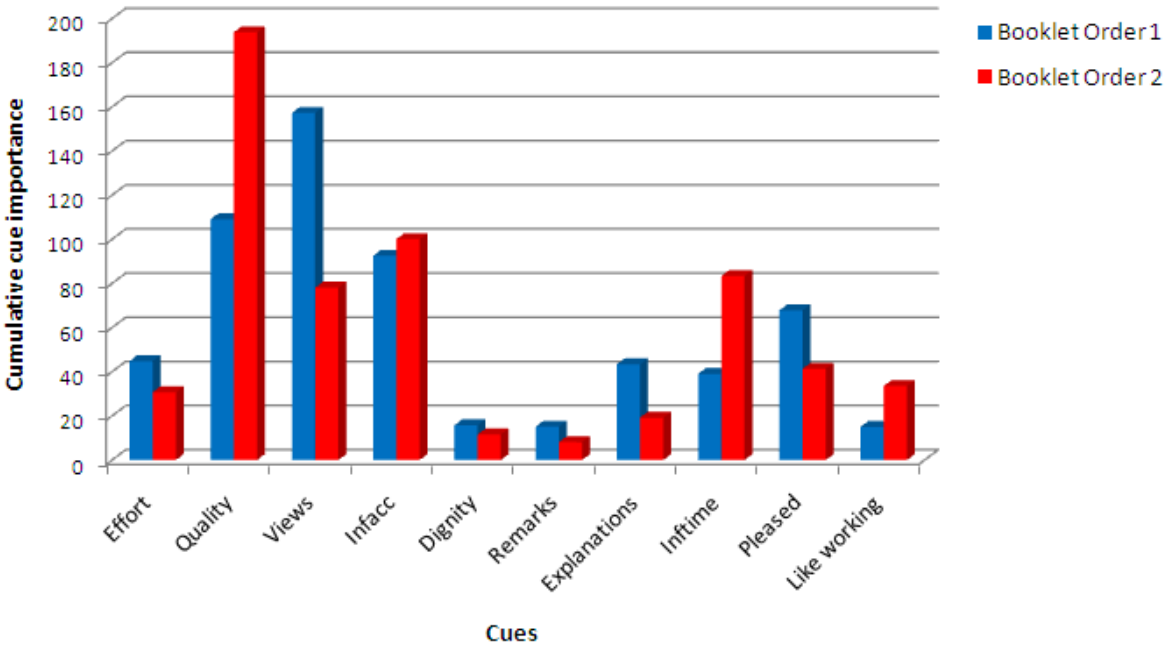


Figure 5.4: Cue weighting by booklet order

5.5.3 Judges' insight into their own mental models

5.5.3.1 Cognitive Reflection Test

The three item cognitive reflection test (introduced in section 5.4.3) was administered to all Judges, but completed by 11. Details of their scores are in table 5.13, alongside individual R^2 for comparative purposes. The maximum score possible on this test of individual difference is 3 out of 3, signifying the individual to be at the more reflective and cognitively controlled end of a cognitive ability spectrum (Frederick, 2005).

Judge	R^2	CRT Answered Correctly
J1	0.952	3
J6	0.932	-
J10	0.917	3
J8	0.915	3
J11	0.908	2
J3	0.894	3
J5	0.869	0
J9	0.864	3
J4	0.863	0
J2	0.846	3
J7	0.696	0
J12	0.641	0

Table 5.13: CRT score and R^2 per Judge (Ordered by R^2)

A high CRT score (high mark) should be indicative of higher levels of cognitive control as individuals with high CRT scores are able to override their impulsive decisions (Frederick, 2005), and are thus expected to be more careful in making their overall justice decision for each profile. Individuals who are able to override their initial impulses are likely to pay closer care and attention in the formation of their overall fairness decision and thus have an identifiable policy which contains statistically significant cues.

A low CRT score indicates that a Judge has a lower cognitive ability. This may provide an explanation as to why for these Judges the lowest proportion of variance in their overall judgment can be explained by use of the 10 cues, i.e., they had the lowest R^2.

Possible CRT scores ranged from 0 to 3 (Avg. = 1.8). There is a strong positive correlation between CRT score and R^2 ($r = 0.67$, $p = 0.02$). The average R^2 for Judges scoring below 2 in the CRT is 0.77, which rises to 0.90 for those demonstrating higher cognitive control (scoring 2 or 3 on the test).

The highest cognitive control was observed by Judges 1 (R^2=0.952) and 6 (R^2=0.932), in contrast to Judges 7 (R^2=0.696) and 12 (R^2=0.641). The regressions for Judges 7 and 12 supported that these two Judges had less consistent policies: Judge 7 only had one statistically

significant (p=<0.05) cue, whilst Judge 12 had no statistically significant cues. As such, Judges with a low R^2 and also a low CRT score were more likely to build a judgment from across the 10 cues, as an alternative to building a unique judgment policy. It should be noted that this finding is based on a small sample of 12 Judges; however, this study forms a pre-test for the larger study which follows.

5.5.3.2 Judge consistency

Consistency of judgment across situations was measured using three profiles that were repeated at the end of each booklet. For the repeated profiles perceptions of overall fairness varied within-person; the most consistent judge varied their overall rating across the three repeated profiles by just 3%. Judge 4 showed most variance at 30%.

The correlations between the first and second viewing of the repeated profiles across all 12 Judges are shown in table 5.14.

		Profile ee	**Profile ff**	**Profile gg**
Profile e	Pearson Correlation	.370		
	Sig. (2-tailed)	.236		
	N	12		
	Coefficient of determination	14%		
Profile f	Pearson Correlation		.855**	
	Sig. (2-tailed)		.001	
	N		11	
	Coefficient of determination		73%	
Profile g	Pearson Correlation			.840**
	Sig. (2-tailed)			.001
	N			12
	Coefficient of determination			70%

**Correlation is significant at the 0.01 level (2-tailed)

Table 5.14: Reliability of repeated profiles

Between two of the three repeated profiles there was a strong significant correlation between the first and second viewing of the profile, with medium non-significant correlation for the third repeated profile ("e" and "ee") (table 5.14). The raw data, as collected from the Raters, provides no explanation for why consistency was lower for profile "e". This suggests that Judges in this sample, on the whole, showed signs of consistency in their decision making across situations.

5.5.3.3 Subjective versus objective policy

Analysis thus far has concerned raw data and the objective policies identified statistically from individual decision making behavior. Having completed the main section of the profile booklet by making overall justice judgments on each profile, the Judges then reflected on their own decision making processes, that is, their own subjective policies of how they formed their overall judgments. As discussed in section 5.4.3, Judges were asked to both, a) rate the cues in order of perceived importance to them making their judgment (each on a 7 point Likert-scale, with 7 signifying the most important contribution), and b) rank the cues in order of importance (by assigning the values 1 – 10, where 1 was the most important). Three different interpretations of perceived importance are therefore available; 1) objective importance (as inferred through regression analysis), 2) subjective rated importance, and 3) subjective ranked importance (subjective policies). The difference between subjective (rated and ranked) and objectively observed (actual) policies indicates self-awareness, that is whether people are aware of their own policy, and how reliable individual theories about their justice judgment processes are.

Table 5.15 shows a comparison of mean importance attributed to the cues by objective and subjective report, with 1 being most important and 10 least important. Whilst not exact in rank, there is some agreement between the top four cues in each measure, that is, for objective and both subjective methods, effort, quality, views and information accuracy were the most salient.

Cue	Objective Weights	Subjective Rank	Subjective Rate
Effort	4	3	4
Quality	3	2	1
Views	2	1	2
Infacc	1	4	3
Dignity	10	6	5
Remarks	9	8	7
Explanations	8	5	6
Inftime	5	7	8
Pleased	6	9	9
Like working	7	10	10

Table 5.15: Comparison of objective and subjective reports of importance

In order to calculate correlations between these methods of attributing cue importance, it was necessary to turn all into rankings, with 1 – 10 ranging from 'not important' to 'very important'. Spearman's Rank Order Correlation is then used to calculate the strength of the relationship between individuals' ratings and rankings, and acts as a measure of consistency and quality of responses (table 5.16).

Judge	Subjective Rank V Subjective Rated	Subjective Rank V Objective Rank	Subjective Rate V Objective Rank
J1	.62	.39	-.08
J2	.88**	.66*	.61
J3	.93**	.62	.66*
J4	.95**	.27	.42
J5	-.94**	-.90**	.82**
J6	.73*	.24	.33
J7	.76*	-.06	.01
J8	.94**	.30	.29
J9	.94**	.30	.26
J10	.95**	-.07	-.09
J11	-.96**	.74*	-.84**
J12	.93**	-.43	-.44
Min.	-.96	-.90	-.84
Max.	.95	.74	.82

*Correlation is significant at the 0.05 level (20-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 5.16: Spearman's Rank Order Correlation between objective and subjective policies

To find the average correlation between the objective and subjective ranks each correlation (r) was first transformed into its standard score equivalent (z') (Lane, 2007). The mean value of these standard scores was then obtained, before transforming these z' back to r. In this way values are normalized to more accurately reflect their relationship.

Correlations between the policies (r) were converted to z' values using Fishers' formula:

$$z' = .5[\ln(1+r) - \ln(1-r)]$$

Equation 5.3: Fishers' z transformation

The average correlation between the different policy measures is shown in table 5.17.

	Objective V Subjective Rate	**Objective V Subjective Rank**	**Subjective Rate V Subjective Rank**
Average (r)	0.176	0.164	0.724

Table 5.17: Average correlation (r)

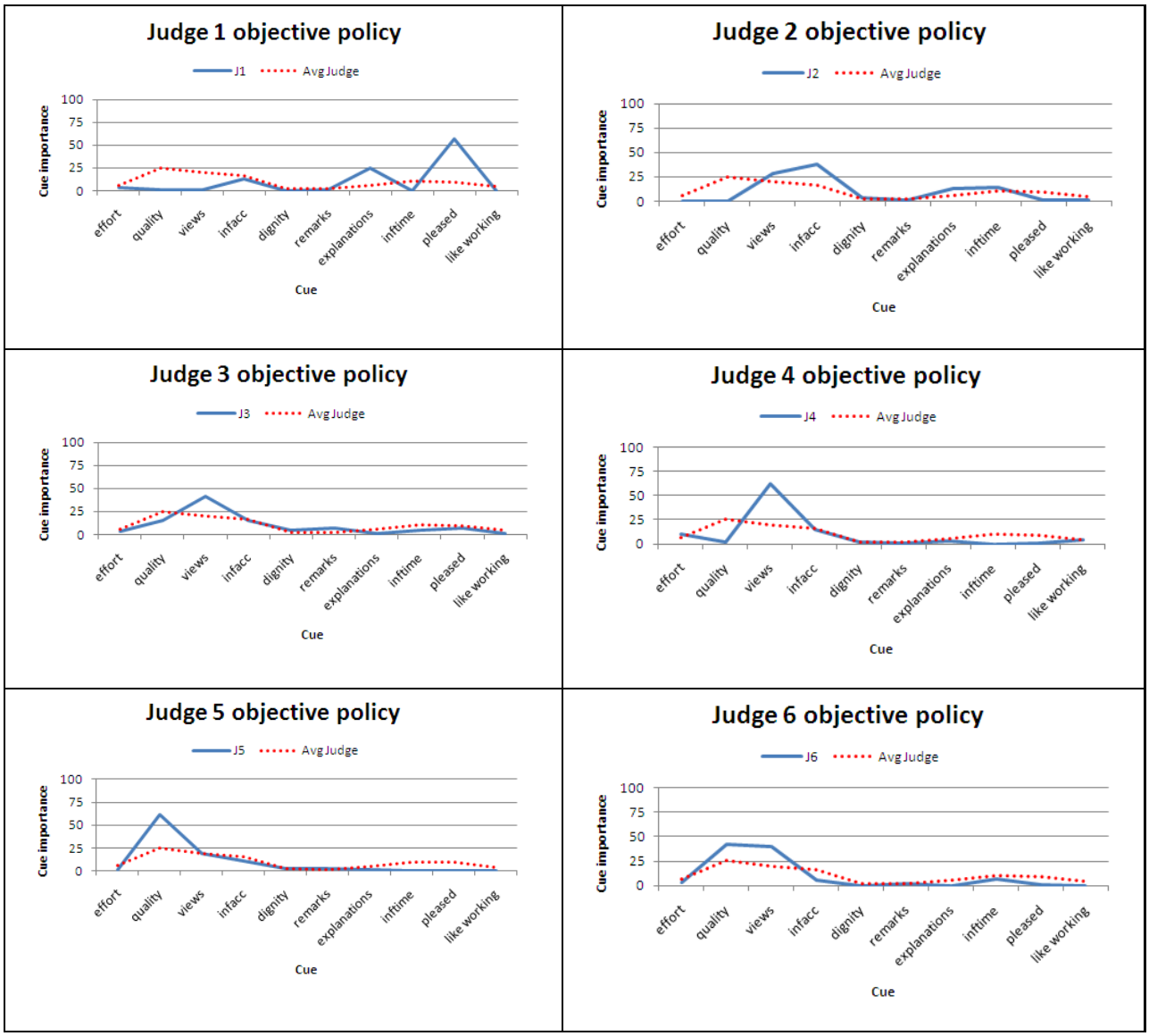
The reliability of the two stated subjective policy measures is 0.72, which whilst strong shows there to be some differences between how individuals describe their subjective policy using the two measures. A comparison of an individual's subjective and objective policies have been shown to measure self-insight and the correlations shown in table 5.17 demonstrate a lack of awareness by individuals with regard to their own cue utilization in making overall fairness judgments. For the sample of Judges, correlation between a Judges' subjective and objective policies is very low. Objectively ranked cues (as derived through regression) correlated with subjectively ranked cues at just r=0.16, and with subjectively rated cues at r=0.18. This suggests that Judges were unable to predict their own policy used in the formation of an overall judgment. However, this finding is not unusual, as subjective and objective policies are often found to be at odds with each other (Carkenord and Stephens, 1994).

Inter-Judge correlation for ranking of cues has a Cronbach alpha (α) of 0.75, and when cues were rated on the Likert-scale for level of importance this resulted in a Cronbach alpha (α) of 0.56. This indicates a high correlation across the Judges when ranking the cues, but less so when asked to rate their importance. This could in part be due to the measures used; when asked to rate the cues, Judges were required to rate 10 items on a 7-point Likert-scale, which may be more difficult (due to the repetition of responses) than for a ranking in which Judges attributed 10 values to 10 cues.

5.5.4 Social agreement in decision making

Whilst the analysis above has focused on within-individual analysis, it is possible to look between-individuals and ask whether the Judges have a consistent model that represents the process of reaching an overall justice judgment. The graphs in figure 5.5 show that individuals use different policies in the decision making process. On appearance, there is diversity of

weighting and cue salience between individuals, as demonstrated by the blue line. The red dotted line on each graph represents the average cue weights across the sample of 12 Judges, and makes it possible to see deviation of policies between Judges.



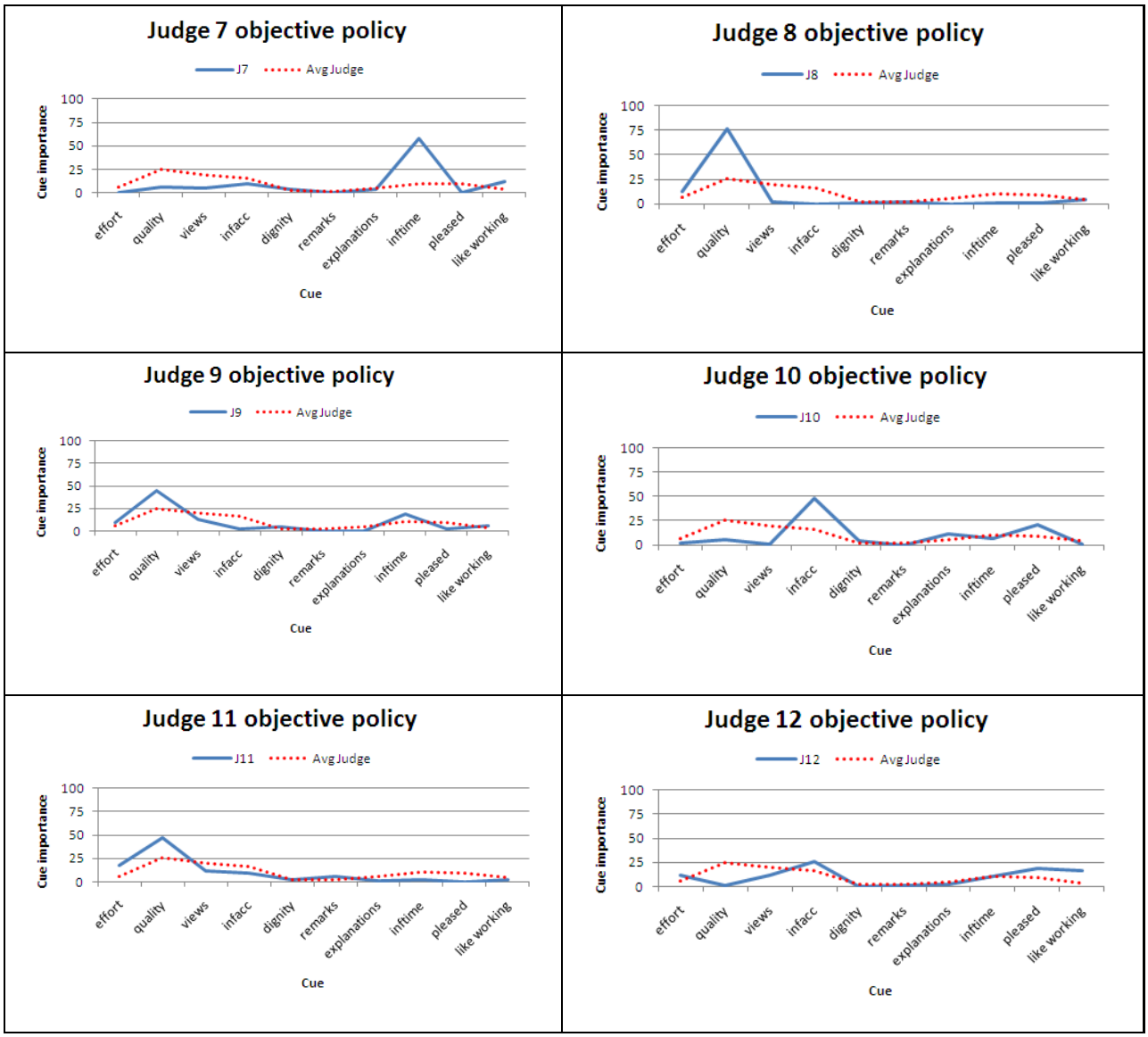


Figure 5.5: Policy by individual Judge

The Chow Test can be used to determine whether there is an improvement in the fit of the model when the sample is split into its sub-samples (each Judge), rather than pooled as one model. In doing so, this test asks whether there is one model (and variants of) which can explain weightings of cues in reaching an overall justice decision of the performance appraisals, or if individuals are using 12 different models and thus there is no consensus of the model or policy used by each Judge.

In equation 5.4 below, the pooled residual sum of squares is denoted as RSS_P, whilst the sub-samples residual sum of squares (of which there are 12, one model for each Judge) is RSS_i.

T represents the total number of observations in the whole sample (12 x 56 = 672), K is the number of independent variables (10) and 12K represents the number of independent variables across all the samples (120).

$$\frac{(RSS_p - \sum_{i=1}^{12} RSS_i)/k}{(\sum_{i=1}^{12} RSS_i)/(T - 12k)} \sim F(k, T - 12k)$$

Equation 5.4: Chow test

$$\frac{(RSS_p - \sum_{i=1}^{12} RSS_i)/10}{(\sum_{i=1}^{12} RSS_i)/(672 - 120)} \sim F(10{,}672 - 120)$$

$$\frac{(509050.316 - 252715.587)/10}{(252715.587)/(672 - 120)} \sim F(10{,}672 - 120)$$

$$\frac{25633.4729}{457l8180924} \sim F(10{,}552)$$

$$= 55.99 \sim 1.85$$

Figure 5.6: Chow calculations

As the Chow Test *F*-value is greater than the critical *F*-test value of 1.85, it can be assumed that the sub-samples are significantly different, and thus there is not one model which can explain the Judges' policies, a finding unlikely to be favored by practitioners, or those conducting the performance appraisals (see implications section 5.8).

5.6 Discussion

The purpose of this study was multi-faceted. The methodology used in Study 1 was described in detail, in order to show how representative design and policy capturing has been, and can be, combined. The combination of these two approaches is used in the context of performance appraisals and is a fresh approach to the study of organizational justice. To this end,

the study offers new insights and possibilities for the field. The central objectives of this study were to investigate, 1) the relative importance of each antecedent of justice (in the fit-for-purpose) scale in determining overall justice judgments, 2) how much insight do individuals have into their own decision making process (their mental models), and 3) whether there is social agreement, or a general consensus between Judges as to a policy for determining the fairness of performance appraisals.

This study has shown there are important differences in the relative weightings of justice antecedents amongst individuals. That is, individuals weigh different antecedents of justice differently in reaching an overall justice judgment. The results show a weighting process is used by individuals in decision making of an overall justice judgment. For example, whilst some Judges included the quality of work being reflected in their policy, others favored the presence of voice, or having their views and opinions heard. Moreover, the relative contribution each of these items made towards an overall decision is also different. For some Judges specific individual justice antecedents contributed strongly towards their judgment. For example, figure 5.5 showed the objective policies of the 12 Judges, with Judges 5 and 8 finding the 'quality' cue particularly salient for their overall judgment with a contribution of 62% and 77% respectively. For other Judges, such as Judge 12, a more unstructured approach was adopted to forming a judgment policy.

At a group level, the most salient cues (within the sample and cues used) were that an appraisal reflects the quality of work of an individual, that the appraisal took the individual's views and perspectives into account and that the information used during the appraisal was accurate, these three cues explaining 60.91% of variance in overall fairness across the sample of Judges. These justice antecedents derive from the distributive and procedural dimensions of justice. The evidence from Study 1 would suggest that the fairness of a performance appraisal can be strongly attributed to the application of fair procedures. Input into the procedures has been signified as important to fairness perceptions within the appraisal context in existing research. Cawley, in a meta-analysis of participation and performance appraisals and employee outcomes finds "participation in the appraisal process is directly related to employees' satisfaction with and acceptance of the performance appraisal system (1998; 624). This study also finds voice, which can act as a proxy for participation during the appraisal, as being particularly salient in determining a fair assessment of a performance appraisal.

Procedures have been shown to impact fairness judgments (Tyler and Lind, 1992) and thus it is not surprising that they play a salient role in the fairness of performance appraisals. In this study, the two procedural items explain 35% of variance in overall judgments. The ability to be involved in the appraisal through voice or other means is important to perceptions of fairness as it allows individuals to believe that they are in some part controlling the outcome. The opportunity for voice has been shown to increase perceptions of fairness (Konovsky, 2000) and in this specific context it has been shown that "when individuals are given the opportunity for voice in the performance evaluation process, their evaluations of fairness are enhanced" (Dulebohn and Ferris, 1999; 288). The due process model for conducting a fair performance appraisal developed by Folger, Konovsky and Cropanzano (1992) also values the importance of voice and would classify procedural concerns as a feature of a fair hearing (Taylor *et al.*, 1995).

The justice antecedents which were least salient in making an overall justice judgment were the two interpersonal justice items; 'were you treated with dignity and respect throughout the appraisal process?', and, 'did those involved in the appraisal process refrain from improper remarks or comments?' When combined these two cues only contributed just over 4% towards the overall judgment. One explanation for this could be that both these interpersonal items reflect upon the appraiser themselves rather than on the employing organization. Whilst the individual being appraised can to some extent pre-determine their outcomes relative to their inputs (through their own performance and commitment), and can make use of voice (if available) to have procedural influence and input into the appraisal, they are less able, as individuals, to control the treatment they receive from the appraiser. This line of reasoning assumes that informational justice antecedents are controlled by organizational policies rather than left to the control of the appraiser. As previously discussed, the mean value of these items viewed by the Judge was the highest amongst the items (table 5.8), and thus, whilst reflecting favorably on the organization from which the sample of Raters and Judges came, the lack of variance could explain why this item was dismissed from individuals' decision making policies. Study 2, which follows, permits insight into the number of times each cue was used in the decision making process and can thus ask whether these cues were used as frequently as others in decision making.

Interestingly, most participants had reasonable control over their judgments. While most Judges' overall justice judgments could be "predicted" by some of the 10 cues, this was not the case for all Judges. For one Judge, there were no statistically significant cues at all. Overall,

Judges had only limited cognitive control over how they combined antecedents to form global justice judgments. This finding is neither lending full support to automatic models of processing such as fairness heuristics (Lind, 2001a), nor to very controlled models of information processing such as equity theory (Adams, 1965). There is a tentative relationship between CRT score and R^2 which suggests that to some degree, the formation of justice judgments may depend on an individual's cognitive ability. In this study, the Judges were given the explicit task to consider the information that was presented to them in a systematic matter; however, in real life the process of making justice judgments may be less systematic and thus not require such high cognitive ability.

Through policy capturing it was possible to identify an individuals' objective policy (calculated by regression) and subjective policy (reported by each Judge) used in reaching an overall justice judgment. With regard to the ability of individuals to understand their own mental models or processes, a comparison of these objective and subjective policies was used as a measure of self-insight. Most Judges identified a policy of cue weightings for reaching their overall judgment (their subjective policy) that did not correspond to the cues they were actually found to use in practice (their objective policy identified through regression). Thus, for this sample of Judges, most were unaware of the real policies they used. This finding highlights a widely known disadvantage of self-report methods. Whilst individuals may believe they are 'telling the truth' and assisting the researcher by being honest, it may be that they are not aware, in some instances, that what they are reporting may not match their actual mental processing. However, between the two measures of subjective policies (ranked and rated) Judges were more consistent in describing the cues they thought had been most important and useful in reaching an overall judgment. This implies that individual insight into own decision making policies is particularly complicated, and it shall be followed up using a larger sample size in Study 2.

In response to whether there is social agreement amongst the sample of individuals in forming justice judgments, the data from the 12 Judges shows that there is no "typical" model or policy used in the formation of an overall justice judgment from the justice antecedents (discussed further in limitations for practice). For this reason, justice measures that use average scores across the antecedents (indirect measures) to predict an overall judgment are only able to do so to a limited degree. This is not to argue that researchers should rely solely on an overall justice measure, as in such a case the researcher can gain no insight into the specific antecedents

behind a judgment. This study draws attention to the uniqueness of individual policies when it comes to decision making, and specifically to reaching an overall justice judgment. The results of this study support the assertion made by (Ambrose and Schminke, 2009) that justice antecedents and an overall measure of justice should be measured alongside each other. Studies that measure overall justice alongside salient justice antecedents will be in a better position to offer insight into how justice judgments are made and thus provide researchers with more specific information for organizational practice.

This study contributes a new methodological approach to justice research. This policy capturing study which adheres to the theory of representative design has been shown to be useful in the idiographic study of individuals and their decision making policies and is the first in the field of organizational justice. Here, sampling is multi-dimensional, that is, rather than solely sampling participants, justice is examined across a sample of real life situations, which are presented to participants (Judges) in naturally occurring configurations. This study shows that whilst rigorous and meticulous, representative design and policy capturing can offer new insights into organizational justice that have not previously been achieved.

5.7 Limitations

It is acknowledged that there are limitations to this study, some of which derive from its policy capturing design. Firstly, by having to make 50 judgments in one sitting participants may experience fatigue, which could have subsequently led them to focus on specific cues to speed up their judgment and participation. However, we in fact see that most Judges attributed salience to multiple cues in their decision making. Existing research has also shown the number of profiles used to be of a reasonable amount for participants to judge (see policy-capturing review section 4.3.1).

The nature of a policy capturing design also required a shorter scale to be developed to capture the fairness of a performance appraisal. The process of developing a shorter scale which was fit-for-purpose could have led to the omission of cues that an individual Judge may have actually strongly weighted, had they remained part of the scale. In such a case, this individuals' policy may have differed from that which was inferred in this study. Nonetheless, the cues used in the final shorter scale were piloted thoroughly and with the first-party Raters and third-party Judges being of the same sample, the cues remained relevant and understandable for all parties.

Thus whilst this study does not permit the generalization that certain cues are the most important in a performance appraisal when its overall fairness is judged, it is possible to state which antecedents were most salient from those presented to the Judges.

Judges were asked to make judgments about the information in front of them, and as an artificial design was not used the information held within each profile was naturally occurring. Judges were then asked to make objective judgments about the subjective ratings of an anonymous colleague's performance appraisal experience. This process of judging the fairness of a colleague's performance appraisal may have been deemed confusing by participants. However, the instruction pages explained the task clearly and although the researcher was present during booklet completion very few participants sought any form of clarification. The judging of real world appraisal experiences was necessary in order that realistic and representative situations could be used.

The sample of Judges was small at only 12 individuals, however the focus here has been on within-individual analyses for each judge, with the *N* for each of these analyses being 56 profiles, or situations. Policy-capturing alongside representative design is viable with as little as one individual and in addition it is still possible to make some generalizations due to the sampling of situations (as discussed in the previous chapter in section 3.7).

Despite these limitations, this study enabled insight into the process of decision making within an organizational justice context and was a first step in bringing new methodological approaches to organizational justice research. Study 2 in Chapter 7, is used to address some of these limitations. The implications for practice and also for research which can expand on this study are discussed next.

5.8 Implications for practice

The nature of this study's design and its use of both representative participants and situations results in high external validity for this study. In this study high external validity is achieved as the cues used are a valid reflection of the natural environment of the participant sample (Brunswik, 2001 [1944]). Still, generalizations must be made with caution as much analysis was within-individual and the cues used were context specific.

For practitioners, it may be daunting to learn that there is not one specific subset of antecedents that guarantees high overall fairness judgments for everyone. Rather there is a set of

antecedents which needs to be satisfied if all employees being appraised are to hold a view that their overall appraisal experience was fair. This study shows that there are differences in how individuals reach a fairness decision. For example, one may highly value the ability to express views and opinions whilst another is concerned that the outcome they receive reflects the effort they put into their work.

Performance appraisals by their very nature are individual. They are (or should be) specific to the individual being appraised. Whilst there is no consensus amongst the 12 Judges as to the weightings of individual antecedents, there are commonalities which provide an overriding picture of the antecedents (within the 10 used) which are most salient to individuals. This study therefore reveals a set of antecedents which have most influence on a fair overall judgment. These antecedents (the reflection of work quality in outcomes, that views and perspectives are taken into account and that the appraisal is based on accurate information) offer some indication to practitioners of those aspects of a performance appraisal that will be used in overall fairness judgments, and thus should be given recognition by the appraiser during the appraisal process. This study also identifies those antecedents to which individuals assign less weight and thus those which have less impact on overall fairness, namely, the presence of being treated with dignity and respect, and the appraiser having refrained from improper remarks or comments.

Future research should assess the salience of these cues for fair performance appraisals using different samples from which to recruit both Raters and Judges. In addition, by conducting the above study in different contexts, such as the fairness of job selection or the fairness of promotion decisions it would be possible to identify "core sets" of justice antecedents that are most salient in different types of situations and across different contexts.

This study found differences between individual's policies, and also that most Judges have the ability to make consistent justice judgments across different situations. This implies that findings regarding justice policies may generalize for most people at least across repeat situations of the same type. For example, an individual would attribute importance (high cue weighting) to justice antecedents consistently and repeatedly over different performance appraisal experiences. In practice, this means that knowing the justice preferences of an employee in one situation can give reasonable confidence that future events of this type will be judged in the same way by this person.

5.9 Implications for research

Whilst the fit-for-purpose scale was derived from Colquitt's (2001) scale, there are of course other measures of justice in use by researchers. Whilst these scales differ in the antecedents they include and the dimensions through which justice is viewed, their commonality is that they have equal weighting of those antecedents. This study has clearly identified unequal weightings between justice antecedents and shown these unequal weightings to be better predictors of overall justice decisions. For justice researchers this shows that current justice scales may be failing to capture the individual importance of certain justice antecedents. The findings from Study 1 support the call for the measurement of justice antecedents alongside overall justice. In this way, additional insight into the justice judgment and more practical insights into the routes of injustice are strengthened.

The results of this study also imply that research which relies exclusively on between-individual analyses will discard some meaningful differences in policies in error. Whilst previous research has focused mainly on between-individual analyses, in this study, the focus is on within-individual variance. Moreover the inclusion of both types of analyses in the same study is likely to explain additional variance than each could individually offer.

The importance of factors used by individuals in the process of decision making may be unclear to researchers who only use a self-report methodology. The findings of this study offer some support to the known disadvantage of self-report methods; that researchers may not be getting 'the whole truth' from participants. This is because, in some instances, the participant may not understand their actual mental processes and thus report in good faith erroneously. Therefore using only a self-report methodology researchers may not achieve a clear picture of the actual process of decision making.

Future research should explore the idea of unequal weightings of justice antecedents in different context and with different samples. This is suggested in the hope that the future of organizational justice research might implement a measure of justice to which weights could be applied and thus their explanatory power increased. As a first step, future research within the performance appraisal context could identify a justice measure specific to this context which may be more beneficial than traditional equal measures. The identification of a "core set" of justice antecedents that most strongly promote perceptions of fairness would require a collection of studies. Future research should employ a representative design to explore the salience of

individual cues across different contexts and different individuals. In this way the extent to which the fairness of a situation can be judged on a core set of stimuli will be understood, and ultimately this may demonstrate that justice scales should not be applied universally.

Whilst it is understood that it would be virtually impossible to devise a study that would be entirely representative of all participants and all situations, it is proposed that an attempt be made to enhance the sampling practices of researchers. This can be achieved by sampling more carefully along the dimensions of participants, situations, and methods. The use of naturally occurring situations is rarely done in experimental justice research. This study has shown that the collection of naturally occurring data for use by participants is feasible and also beneficial. Through re-designing studies with more explicit sampling not only among participants, but also among different situations and methods, it is possible to advance understanding and the generalizability of justice knowledge.

This study has shown both representative design and policy capturing to be useful tools in the study of organizational justice, and shows that in combination they can be used to gain further insight into the field.

5.10 Conclusion

The adherence with Brunswik's theory of representative design means that this study is one of the first studies to investigate organizational justice across a sample of real life situations, rather than solely sampling participants. Moreover, it not only samples situations, but does so as they naturally occur. As such, this research demonstrates the possibilities of representative research designs for organizational justice research. This study is also the first in the field of organizational justice to combine a representative design with policy capturing to focus on gaining a within person insight into the process (policies) by which antecedents are used in the formation of an overall justice judgment.

This study has provided a first step into the process of making overall justice judgments based on individual justice antecedents. In Study 2 this process is extended and developed further. In Study 2, a larger sample of Judges complete a task using process-tracing software (Mouselab) to gain further insight into how individuals process information in reaching an overall fairness judgment, shown through the length of exposure to antecedents, repetition and

viewing order. With a different methodological tool, Study 2 builds upon the findings of Study 1 in identifying the salience of justice antecedents in the formation of overall justice judgments.

In the following chapter process tracing is introduced as a method for understanding not only decision making policies, but also decision making processes. This technique is adopted in the second study of this thesis detailed in chapter 7.

Chapter 6: Process Tracing

6.1 Introduction

How do individuals form perceptions of overall justice? Study 1 has shown that individuals apply different relative weights to individual antecedents. These relative weights of individual antecedents or "cues" constitute the decision making policy for making overall justice judgments. Policy capturing tools enabled an individual Judge's decision making policy to be inferred statistically using linear regressions between the cues and overall justice judgment. However, whilst deduction using regressions can provide information on the cues which lead to the overall judgment, this type of analysis does not inform about the cognitive processes used by an individual in reaching an overall decision (Pitz and Sachs, 1984, Todd and Benbasat, 1987, Ford *et al.*, 1989). There exists what Todd and Benbasat (1987) refer to as a "black-box" between stimulus and response, which in this case refers to the process occurring between exposure to justice antecedents and an individual's overall justice judgment.

Process tracing can be used to examine "the information acquisition process" itself (Ford *et al.*, 1989; 108). Whereas the linear analysis of policy capturing derives underlying processes deductively, process tracing tools provide an inductive view of cognitive processes (Einhorn *et al.*, 1979). An insight into the "black-box" of overall justice judgments holds promise for both researchers and practitioners. In this way, we go beyond deductively inferring what information is used, and we gain an insight into the process of *how* information is being used in the formation of overall justice judgments.

This chapter introduces process tracing as a means to access the "black-box" and the strategies used by individuals when making an overall justice judgment. Initially process tracing is discussed alongside the advantages and limitations of this approach. Decision making is then classified as either a judgment or choice (section 6.5). In section 6.6, different process tracing tools are reviewed, and then information processing behaviors are discussed. This chapter concludes by integrating process tracing, organizational justice research and a representative design, and introducing these as the framework for a further empirical study.

6.2 What is Process Tracing?

Process tracing can be described as a dynamic account of the thinking and reasoning used by an individual during a task (Patrick and James, 2004, Patrick *et al.*, 2006). Process tracing offers insight into the cognitive processes used by individuals (Russo, 1978, Sundstrom, 1987) and does so by examining "the information individuals seek before making a choice and how that information produces a choice" (Lohse and Johnson, 1996; 28).

Process tracing techniques are concerned primarily with the processes leading to a decision, rather than the decision itself. The emphasis of traditional experiments is on the output (or dependent variable), such as which candidate should be given the job or which product shows the highest preference. However, in process tracing the emphasis is on the strategies an individual uses to arrive at their decision or preference (Ford *et al.*, 1989). Traditional research methods prohibit such insight as participants are often exposed to multiple stimuli (cues) simultaneously. The problem with this is that it is impossible for the researchers to establish which pieces of information (stimuli) are being used, what order they are being used in, or at what point a decision is made (Andersson, 2004). Process tracing overcomes such problems by segregating cues. In this way, the participant has to actively engage with the search for information in a process that can be traced by the researcher.

6.3 Benefits of Process Tracing

When individuals are asked to complete a self-report survey, or describe their reasoning for a decision, or action, in a semi-structured interview for example, the researcher can only believe what they are told. Asking participants to reflect on the processes they used to reach a judgment may be equally troublesome, and the accuracy of this information may lead to false interpretation. For this reason, policy capturing studies (as used in chapter 5) are often combined with questioning an individual to reflect upon their decision making process, but there is much evidence, including the results presented in Study 1, that individuals have poor insight into their own decision making processes (Slovic and Lichtenstein, 1971, Andersson, 2004). The most effective way to attain the cue utilization used by individuals is to use process tracing techniques which map out the processes used by individuals as decisions are made.

The significant advantage of using process tracing techniques is that it becomes possible to monitor the decision making process itself, and explore each of the three stages of decision

making posed by Einhorn and Hogarth (1981); information acquisition, evaluation of information and inferences. This can be done by ensuring that cues are used sequentially, an overall decision is collected for each situation, and then using regression techniques to infer the decision making policies used by individuals, i.e., the weights they assign to each cue in making a judgment. A further benefit of process tracing is that it overcomes social desirability biases. This is so because it is the process of cue acquisition and decision making that is of concern rather than the final decision or judgment itself, the latter of which is easier to fake in accordance with perceived desirable responses.

Through process tracing, the actions and behaviors of individuals during decision making are recorded, ideally as often as possible before a decision is reached (Svenson, 1979, Ford *et al.*, 1989, Jasper and Shapiro, 2002), rather than it being inferred or collected after a decision has been made. Process tracing can thus provide a rich dataset that can be used to make "inferences about the cognitive processes underlying problem-solving performance" (Van Gog *et al.*, 2005; 237). Process tracing tools can be used to directly access what information is used by an individual, the order in which information is accessed (Ford *et al.*, 1989), how long the information is processed for, and how much information is acquired before a decision is made (Lohse and Johnson, 1996).

6.4 Criticism of Process Tracing

As with all methodological choices, there are some limitations of process tracing. Jacoby *et al.* (1987) identify lack of generalizability as the main drawback of process tracing approaches, due to potentially intrusive experimenter control, artificial presentation of stimuli and non-representative task characteristics. In designing a process tracing study the experimenter is forced to limit the information made available to a participant. It would be impossible for a researcher to include all possible antecedents which may affect a decision, and thus results can only be attributed to the antecedents used. It is also possible that in some instances artificial data is used by researchers which may not be representative of real world decision making. The generalizability of process tracing results is also contingent upon the presentation of stimuli. However, the availability of relevant information (stimuli) can be manipulated by the researcher during the study design stage in order to better represent the real world and the cues that would be available in it.

Demand characteristics are present within most research and are equally present in process tracing studies, as it is likely that the methodological tool used makes it evident that the process of decision making may be under investigation (Jacoby *et al.*, 1987). Often the monitoring of decision making behavior is obtrusive (see section 6.6) and thus participants may alter their behaviors, and in doing so what is captured may not be a natural representation of decision making. However, as discussed above, the fact that the output of the decision is not the primary purpose of process tracing makes it more difficult for an individual to manipulate their own behavior.

Nonetheless, process tracing is a flexible tool which can be used to gain insight into cognitive processes which would otherwise be ignored. A well designed process tracing study that does not claim to generalize too far can overcome some of the above limitations. In addition, the adoption of representative design in this thesis facilitates a decision making environment that is more representative of the real world, than studies whose stimuli are created artificially. Process tracing research can be divided into two categories; those that elicit a judgment as output, or those which require a decision or choice to be made between alternatives. The subsequent section outlines the two approaches in more detail.

6.5 Judgment or Choice?

Process tracing is used to trace the process and strategies used by an individual in reaching a decision. These decisions fall into two categories; choice and judgment, and are the only straightforward observable decision behaviors (Payne, 1982, Pitz and Sachs, 1984). Judgment tasks require an overall rating about a situation, often on a continuous Likert type scale (Billings and Scherer, 1988), whereas choice tasks require the participant to choose from a range of alternatives (Ford *et al.*, 1989), be this a preferred loaf of bread (Lehmann and Moore, 1980), an apartment (Sundstrom, 1987) or which candidate should be hired (Billings and Scherer, 1988). Jacoby *et al.* define a (social) judgment as a "*process* by which judgments are formed over time as selected information features of a stimulus are attended to, encoded, and evaluated, and other features are ignored" (1987; 147). Although they are distinct processes, under some circumstances choice may be based on a foundation of judgment (Einhorn *et al.*, 1979, Einhorn and Hogarth, 1981). However, the two response methods do not always elicit the same responses from participants. The act of making a judgment and reaching a decision [choice] are not

equivalent (Gilliland *et al.*, 1998), and the response mode (choice or judgment) can lead to differences in information search processing behavior (Payne, 1982, Billings and Scherer, 1988, Ford *et al.*, 1989, Gilliland *et al.*, 1998).

The two response modes can be distinguished through the type of processing they promote (Payne, 1982). In choice, participants look for dissimilarities to discriminate between alternatives and can eliminate attributes leaving a comparison of fewer stimuli across alternatives. A judgment, on the other hand, requires more cognitive effort than choice (Billings and Scherer, 1988) as judgment tasks "encourage use of all pieces of information for an alternative" (Billings and Scherer, 1988; 4). Judgment tasks require an overall assessment of a situation and a more deliberative response (Einhorn *et al.*, 1979).

In a process tracing experiment using information display boards, Billings and Scherer (1988) manipulated the response mode between choice and judgment. They concluded that a judgment, over choice, led to "more information searched, more interdimensional processing of information, and less variability of information searched across the alternatives" (*Ibid*; 15). In his 1998 studies Gilliland had each participant make a judgment and decision about one scenario presented to them in which the number of fairness violations was manipulated. His studies showed that when participants made procedural fairness judgments about the company, e.g. "how fair was the company in the way they conducted the layoff?" (Gilliland *et al.*, 1998; 120) they used more information than when asked to make a decision about whether that company should receive an award for the ethical treatment of their employees. When they were asked to make a decision, individuals screened information. That is, they eliminated information in order to reduce the cognitive effort needed to make a decision. In addition, Gilliland *et al.* found that when making fairness judgments individuals "tend to give equal consideration to what is done right and what is done wrong" (1998; 129), in contrast to decision making when attention is directed to what is done wrong. As a judgment is an overall assessment then it requires the entire range of alternatives to be evaluated prior to a judgment being made.

Billings and Scherer (1988) posit that judgments are often used in policy capturing studies, whilst choice between alternatives in generally adopted when using information boards (a process tracing tool) (see below). However, Study 2 of this thesis uses process tracing to monitor the judgment making process. As organizational justice is a perception about a situation which is operationalized through fairness judgments, this construct does not lend itself to a

choice response (Gilliland *et al.*, 1998). Specifically, in Study 2 participants are asked to make an overall judgment about the fairness of multiple situations. In Study 2, the aim is still to attain a dependent outcome (i.e., overall fairness) for each situation, rather than have participants select the 'most fair' from a set of performance appraisal situations. The later would increase the effort required by the participant and also direct them to making choices rather than justice judgments.

Numerous process tracing tools are available and these will be reviewed and critiqued in the following section. As shall be seen, process tracing tools and their abilities have enhanced through technological advances and each come with their own advantages and limitations.

6.6 Process Tracing Tools

There are several process tracing methods available to a researcher interested in the information acquisition and cognitive processes used by an individual in reaching a choice or judgment, and these vary in terms of complexity, expense, intrusiveness (for the participant) and quality of data output. This section will review five tools which can aid process tracing; information display boards, verbal protocol analysis, eye fixation or movement technologies, chronometric analysis and computer process tracing systems.

6.6.1 Information Display Boards

Original process tracing studies were conducted using an information display board (IDB). In essence this is a board containing numerous envelopes, often laid out in a matrix design with attribute columns and alternative rows (Sundstrom, 1987), and in each envelope is a card containing information about one variable that could be used in reaching a decision. Only one envelope can be opened at a time, and the card must be replaced, or discarded, before a new one can be chosen. The participant then continues to select envelopes and collect information until they are ready to make a decision. By recording the search pattern used by a participant the researcher is then able to make inferences about the participant's decision processes and strategy (Billings and Marcus, 1983). An IDB is illustrative of most process tracing techniques (Russo, 1978) and is most often used when participants are asked to select between alternatives. For example, Billings and Scherer (1988) used a 8 x 6 IDB to present information about potential candidates for the position of residence hall advisor on 6 categories, including leadership experience and disciplinary style. Each college student participant was presented with 8 boards

making a total of 64 candidates. In the choice manipulation they had to choose who would be best suited for the position, and in the judgment manipulation they had to rate all candidates before identifying the best for the job.

A major drawback of IDB methods is that they require a lot of effort from the decision maker in collecting information and are obtrusive (Arch *et al.*, 1978, Russo, 1978, Lehmann and Moore, 1980, Payne *et al.*, 1993). Information boards often require "intentional or consciously goal-directed" (Arch *et al.*, 1978; 555) information acquisition behavior, which may not be required in real world decision making, and which may alter the natural decision making processes that would otherwise have been used. This can result in low quality data that may not be naturally occurring (Russo, 1978) and thus the artificiality associated with IDBs can lead to studies with poor external validity (Cook and Swain, 1993). IDBs are best suited to gaining an insight into information acquisition rather than information processing per se (Lehmann and Moore, 1980, Todd and Benbasat, 1987). In a review of process tracing methods, Russo (1978) reports that IDBs have the lowest reacquisition rate, due to the effort required, and so may not even reflect realistic levels of information acquisition. Nonetheless, information display boards are an inexpensive way to gain some insight into decision making (Russo, 1978).

6.6.2 Verbal Protocols

A second choice for collecting process information from participants is to use verbal protocols. This is often done alongside other methods, such as IDB or eye fixations (below), and requires a participant to "think aloud" whilst they are completing a task, that is, "subjects are required to verbalize what they are thinking as they perform the task" (Russo, 1978; 564). As this process takes place concurrently with task participation it is particularly obtrusive, as the act of giving a verbal protocol will itself require cognitive resources (Payne *et al.*, 1993). A major disadvantage of this method is that it is difficult to analyse (Russo, 1978), however, it is the only method in which the processes are explained as they are self-interpreted by the participant as they go through the task. A further limitation of this approach is that people are often not well-practiced describing their decision making processes (Cook and Swain, 1993), or talking to themselves, and so they may require training in order to "generate verbal protocols that are informative" for the researcher (Russo, 1978; 567). In addition, they may lack insight or the

ability to express their actual mental processes (Slovic and Lichtenstein, 1971, McGuire, 1976, Nisbett and Wilson, 1977, Payne *et al.*, 1993).

6.6.3 Eye Fixation Technology

The most technologically advanced, and consequently most expensive, process tracing tool involves the tracing of eye movement, using eye fixation technology. This method records "sequences of eye fixations and the duration of each fixation" (Todd and Benbasat, 1987; 496), which can be done using video tapes of a participant's face during task completion, or by using electronic monitoring devices, the latter providing a more accurate record of eye movement (Cook and Swain, 1993). A problem with this method is that "eye movements do not necessarily tell what information a subject acquires, processes, or evaluates" (Todd and Benbasat, 1987; 496). As Jacoby *et al* (1987) discuss, the eye has to look somewhere but that does not mean this information is being processed. However, this method can provide a highly rich dataset, which is most useful when a systematic display of information is used. Using eye fixation tools alone it is not possible to record information processing, but only the acquisition of information (Russo, 1978) that may have been used by participants. However, it has been argued that this is the least obtrusive method of process tracing (Russo, 1978, Cook and Swain, 1993). Whilst it may require the user to wear a monitoring device and keep their head relatively still, research has shown participants to soon forget that their eye movements are being recorded (Russo, 1978). Due to this method being largely laboratory based this method is somewhat artificial (Cook and Swain, 1993). Despite this, the recording of eye fixations has high validity as it is difficult for participants to screen their actions and thus their eye movements represent a valid account of the cues viewed during the acquisition process (although participants may process information on the peripheries of their vision without visible eye movement) (Lohse and Johnson, 1995). Put simply, the main criticism of this method is that "the equipment is complex and nontrivial to use, it is quite costly, and analyses of the data are time consuming and difficult" (Payne *et al.*, 1993; 265).

6.6.4 Chronometric Analysis

A less common method of process tracing is chronometric analysis (Russo, 1978). This method deduces that the total time taken to complete a task can be recorded across different

experimental conditions and comparison of the mean times can offer an insight into the cognitive processes used. However it offers no insight into the actual information acquired during the task.

6.6.5 Computer Process Tracing Systems

Enhancing the information display board using computerized technology has led to computer process tracing systems (CPTs), which have become the most popular form of studying information acquisition behavior (Lohse and Johnson, 1995). These systems employ the use of a computerized input device, such as a mouse or keyboard, to acquire information. The process tracing method adopted in this thesis is that of a process tracing software called MouselabWeb (Willemsen and Johnson, 2005) which is one form of CPT. A discussion of this particular software follows in the next section, but first attention is paid to CPTs in general.

The main benefit of CPTs is the level of insight they can provide into the decision making process; they are able to simultaneously record information about which cues are used, search patterns, time spent searching, and a final decision. As this data is recorded electronically throughout the task, this results in a rich dataset which aids analysis (Cook and Swain, 1993, Andersson, 2004).

Computerised information tracing tools require less effort on the side of the participant and therefore increase the quality of data over that collected through traditional IDBs (Russo, 1978). In addition, unlike verbal protocol methods, CPTs do not require an individual to describe their own cognitive processes, or require the active presence of a researcher during task completion, and therefore information is collected through a largely unobtrusive manner (Cook and Swain, 1993). Yet, CPTs can be prone to criticism regarding cognitive intrusion and care must be taken in software design so as "not to interfere with the user's natural decision process" (Cook and Swain, 1993).

CPT methods are open to criticism regarding external validity as they are completed in a controlled environment such as a laboratory and do not emulate how information is usually collected to form a decision (Covey and Lovie, 1998). Individuals using CPTs often use sequential information acquisition techniques although it has been shown that individuals reacquire more information when using CPTs rather than IDBs (Russo, 1978), which could be attributed to the ease of data acquisition. However, Andersson (2004) has argued that this form

of decision making is becoming more frequent and natural for participants through the growth of the Internet and how individuals collect data before purchasing a product, for example.

6.7 Mouselab

The process tracing software MouselabWeb (referred to herein as Mouselab) falls somewhere between the information display board and eye fixation methods in terms of advantages for understanding decision making behavior. It combines the speed of information acquisition of eye movement technology with a minimal cost in terms of price and difficulty for both the participant and the researcher that is associated with IDBs (Payne *et al.*, 1993). In a comparison of Mouselab and an eye fixation tool called Eyegaze, Lohse and Johnson (1996) found that subjects using Mouselab searched for more information when making a decision, than those using Eyegaze, which is most likely attributed to the systematic information search required to reveal the cues in Mouselab. They also found that the reacquisition rate of Mouselab is closer to that found using eye tracking methods than IDBs, as it is much faster to reveal information using a computer mouse than turning over envelopes in an IDB task (Lohse and Johnson, 1996). Mouselab provides an easy to use tool for process tracing and strategy classification (Glockner and Batsch, 2008), and is the process tracing tool used in study 2. The Mouselab design and task administered to participants in this thesis can be found in chapter 7.

With Mouselab the participant uses a computer mouse as a pointing device for revealing information before making a decision. Mouselab uses a "reveal and conceal" mechanism in order to isolate individual cues. When the mouse pointer is placed "over" an information box then the information is revealed, and when the mouse pointer is removed it is concealed again. This systematic process to decision making may be different to how judgments are made naturally, but this sequential process provides insight into the decision making strategies and processes used by individuals. Mouselab records information acquisition actions such as "what information the subject seeks, the sequence of acquisition, how much information is acquired, and for what duration information is examined" (Payne *et al.*, 1993; 264) and does so to an accuracy of $1/60^{th}$ of a second (*Ibid*). Over the task period a rich database of the process used by an individual is compiled into an output file (Norman and Schulte-Mecklenbeck, 2009).

Payne et al (1993) identify three benefits of using a computer mouse as the information acquisition device. Firstly, ease of learning; as most people are familiar with the mouse as a

computer input device, little training is required on how to use the pointer to select information. Second, rapid movement; the movement of a mouse has been shown to be faster than other input devices and is only limited by the speed of cognitively deciding where next to move the pointer. The third advantage is its error rate. The error rate refers to how often a device is used to select an incorrect (undesired) piece of information, and the mouse error rate is significantly lower than other devices (Payne *et al.*, 1993).

One disadvantage of Mouselab is that it only captures "about 60% of the process tracing data" (Lohse and Johnson, 1995). The records made in the output file only relate to mouse movements over the cues, and not when a participant moves the mouse over cue labels or other areas of the screen which may also have provided valuable insight into the process itself (Norman and Schulte-Mecklenbeck, 2009).

As one piece of information can only be revealed at a time this may restrict the search process used and encourage a "serial mode of information search" (Glockner and Batsch, 2008; 1056), and such a systematic process may "underestimate humans' total cognitive capacity" (*Ibid*; 1056). Of course the presentation of available cues during the task can be used to investigate whether, and to what extent, participants are being led through their decision strategy serially. Glockner and Batsch (2008) thus criticise Mouselab for requiring participants to engage in information search rather than processing.

Mouselab is the process tracing method chosen in Study 2 to gain insight into the information acquisition processes used by individuals when reaching an overall justice judgment. It is downloadable free online and can be programmed using HTML programming language to design the task required. The next section will discuss how context and presentation of stimuli can affect information processing behavior and supports a call for representative design.

6.8 Information Processing Behavior

There are several factors that can affect the information processing behavior and strategies used to make a decision. As the process strategy used by individuals is subjective, the extent to which the task characteristics will affect an individual's choice of strategy is "mediated by the decision maker's perception of those characteristics" (Beach and Mitchell, 1978; 444). These task characteristics can be classified as those relating directly to the task and those relating to the environment (*Ibid*).

Payne (1982) found decision strategies adopted by individuals to be highly dependent upon the demands of the task being completed. Increased task complexity will likely lead to strategies which eliminate some information (be this attributes or salient cues) in order to reduce cognitive demands (Payne, 1982). Beach and Mitchell (1978) identified four task relevant characteristics that can affect the decision making process used by an individual; level of unfamiliarity, level of ambiguity, level of complexity and insatiability. Level of unfamiliarity can be attributed to the realism of the task and whether it is representative of decisions naturally made by the individual. The level of ambiguity can be controlled through pilot testing, clear instructions and practice tasks in order that the individual understands what is being asked of them. Complexity concerns can arise through the amount of information available to the participant, and instability concerns consistency and the "degree to which criteria, goals and constraints of the problem change during and after the decision, particularly if those changes are difficult to predict" (Beach and Mitchell, 1978; 444).

The environment in which the task is completed can also change perceptions about process strategies used by individuals. Lohse and Johnson state that the most important contribution made by process tracing research is "an understanding of the how decision environments affect choice" (Lohse and Johnson, 1996; 40). Beach and Mitchell (1978) identified four influencing decision environment characteristics; irreversibility, significance, accountability and constraints. In reality, one-off judgments are not made under strict conditions and there is often an element of reversibility available. When this is not present in the task environment this can place additional pressure on the individual to make the right decision, although often there is no objective right answer. The level of importance riding on a decision can also affect how information is used to reach a decision, as can how accountable the individual will be for their final decision. Finally, when time pressure is added to a decision this can lead individuals to quickly eliminate some options from their strategies. Under severe time pressure Payne *et al.* found that individuals react by "acceleration, filtration, and changes in strategy" (1988; 548), and the effect of time pressure can lead individuals to change their decision strategies (Payne *et al.*, 1992).

When information, task characteristics, and environmental characteristics are manipulated during a set of decision making tasks it is possible to record changes in decision making behavior which may subsequently occur and use this to gain insight into how different

variables affect the decision making process. Moreover, research that is designed to be representative is more able to reflect decision making in the real world as it accounts for natural variances in task environment and demands. For example, the level of familiarity with a task or the significance of a decision should be appropriate for the sample of participants who are undertaking the task. Researchers, when analysing process tracing data, have many indicators at their disposal to understand the cognitive information processing behavior used by individuals, and these are presented next.

One indicator of processing is the total amount of information that is searched for before a judgment (or choice) is made. This depth of search (Ford *et al.*, 1989) can be affected by the complexity of the task (Payne, 1976) and also whether any time pressure is introduced on decision making.

A second indicator relates to which cues, or pieces of information, are used. The decision maker may not believe it necessary to use all the available information. For example, they may choose to use only the information they deem most important to them (Andersson, 2004). Lohse and Johnson state that because Mouselab limits participants to viewing one cue at a time, individuals may conduct a "systematic scan of the data initially to see the range of values" (1996; 37), and consequently have higher information search processes than those using other methods such as eye tracing software (they compare Mouselab to Eyegaze fixations).

A third indictor is the sequence of search, or the order in which information is used. This indicator is known to be affected by the mode of response adopted by the researcher (as discussed in section 6.5). Sequence of search is a particularly important measure of transition between information when cues are presented in a matrix with alternatives and attributes. In such an information display, what is of interest is how the participant moves between attribute and alternative. For example, when making a choice about the most suitable job candidate, does the participant look at all cues about one job candidate first, before moving to the next candidate, or, do they consider all candidates across one cue, such as leadership experience, and move through the available cues? (Billings and Scherer, 1988). Jacoby et al (1987) identify the four possible search patterns; as 1) same alternative – same attribute, 2) same alternative – different attribute, 3) different alternative – same attribute, and 4) different alternative – different attribute.

A fourth indictor of information processing behavior is cue reacquisition, that is, whether a cue is revealed or used multiple times before a decision is made. Cue reacquisition rates have

been shown to differ depending on the process tracing method adopted. For example, participants using information display boards make fewer cue reacquisitions than those using computer process tracing tools (Russo, 1978, Lohse and Johnson, 1995), most likely explained by the effort involved in accessing information.

A fifth and sixth indicator are the time taken searching individual cues before a decision is made (latency of search), and the overall time taken to complete the task. There is debate about how useful time is as a proxy for effort exerted by a participant during the task. Lohse and Johnson (1995) use the time taken to make a decision as one measure of cognitive effort, as it may be construed that the more time spent on a task the more cue reacquisitions are made. As expected the time spent is often highly correlated with the amount of information revealed (Norman and Schulte-Mecklenbeck, 2009). Conversely, Kadous (1996) states that time spent on a task is not a good measure of effort exerted by an individual, as effort should also include a measure of task intensity and difficulty. O'Donnell (1996) posits that time spent per iteration is a reasonable measure of effort, but using a measure of self-report effort Bettman *et al* (1990) found only a weak relationship between time and (self-reported) effort (r= 0.29).

The above indicators can be used in order to understand more about the decision processes used by an individual (Andersson, 2004). For example, in the context of forming an overall justice judgment, the overall length of time that the decision takes may indicate the complexity of making such a decision, and the cues used most (or viewed the longest) during the decision process may reflect those cues which are most salient to the decision. When cue reacquisitions are made, this could be indicative of several things; a) which cues are most important and are being confirmed, b) which cues the individual is trying to discount from their decision making, and c) it may also reflect how much effort an individual is putting into their judgment. If minimal reaquisitions are made then this may be indicative of little effort, or an individual who makes impulsive decisions

Other factors which can affect the process behavior exhibited by an individual, which are independent of the cues themselves, are individual differences or personal characteristics (Beach and Mitchell, 1978). Previous process tracing studies have investigated the effect of a range of factors on decision making, including measures of cognitive ability (Capon and Davis, 1984), the need for cognition (Levin *et al.*, 2000), prior knowledge and experience (Bettman and Park, 1980), and skill and expertise of decision makers (Shanteau, 1992). For example, Bettman and

Park (1980) found that individuals with medium prior knowledge about microwave ovens processed the most information before selecting their most preferred brand(s), when compared to those low and high in prior experience. This is explained by the medium group having the ability (some prior knowledge) to process information about the products (not possessed by the low group), but not having enough information to not search for information before making a decision (unlike the high prior knowledge group). Thus, experience with a task may influence the manner by which individuals process information before making a judgement or choice.

6.9 Self-Insight into Decision Making Policies

As previously stated, process tracing can provide insight into the "black-box" of decision making by not being reliant on individual self-accounts of the process of decision making.

An individual's subjective account, as described in the section 4.4 of the policy capturing chapter, is also frequently collected during process tracing studies. This can be used to provide some measure of self-insight that an individual has into their decision making policy. As demonstrated in Study 1, individuals have largely been shown to lack insight into their own decision making policies (Slovic and Lichtenstein, 1971, Nisbett and Wilson, 1977, Andersson, 2004). Therefore it is not surprising that there is often disagreement between subjective (those described by a participant) and objective (those inferred statistically) weights assigned to individual cues (Einhorn and Hogarth, 1981, Ford *et al.*, 1989).

In section 6.6.2, the use of a concurrent or retrospective verbal protocol is discussed, and the same applies when collecting subjective policies of individuals, which is essentially what is done using verbal protocol techniques. It should be acknowledged that policies collected post-decision may be biased as individuals try to rationalize their decision making behavior (Andersson, 2004), but also do not disturb the cognitive processing used by an individual during the task itself. Todd and Benbasat (1987) state that retrospective protocols (or arguably also subjective policies) are most useful acting as supplementary data. Research has also shown that not only can individuals not provide accurate accounts of what they did, but moreover, they cannot report why they did something (Nisbett and Wilson, 1977, Todd and Benbasat, 1987). However, the comparison of subjective and objective policies provides some interesting insights into the decision making process, which are not possible using more traditional methodologies. For more detail on the collection of subjective decision making policies the reader is referred

back to section 4.4 in chapter 4. In process tracing studies, it has been shown that "people do not select the information they ought to; they do not select information diagnostically and are not sufficiently attentive to alternative hypotheses" (Covey and Lovie, 1998; 57-58).

6.10 Process Tracing, Organizational Justice and Representative Design

Process tracing can serve multiple purposes (Lohse and Johnson, 1996, Jasper and Shapiro, 2002); it can be useful for developing and testing theory, to gain insight into how different variables can affect the decision making process, such as significance of the decision or the effects on decision making of time pressure. Process tracing can also have a practical use, providing a catalyst for change. For example, an understanding of the information process behaviors of individuals when reaching a judgment about workplace fairness may lead to changes in workplace practices. In this thesis process tracing is adopted to gain an insight into the processes by which an overall justice judgment is formed, an understanding of which can have real world application in minimizing the adverse effects of perceived injustice in the workplace.

The author is not aware of any research which has used process tracing techniques to study organizational justice whilst adhering to Brunswik's theory of representative design. At first sight, these approaches seem to be at odds with one another. Researchers interested in the underlying cognitive processes used by individuals in decision making often have this as their single goal, at the expense of high levels of external validity. In this case, researchers explicitly control the stimulus presented to individuals, "even though some degree of realism may be lost in the process" (Slovic and Lichtenstein, 1971; 658). On the other hand, advocates of Brunswik are less concerned with "the organism itself, but on the adaptive inter-relationship between the organism and its environment" (Slovic and Lichtenstein, 1971; 655). Yet, these two approaches to research can be complementary, and their combined usage could enhance current process tracing research by improving its external validity whilst concurrently providing insight into individuals' cognitive processes. It is argued that the extent to which process tracing studies are effective in describing the decision process depends upon "the closeness of the match between the simulated choice environment and the actual choice environment" (Lohse and Johnson, 1996; 40).

The second empirical study of this thesis which follows in the next chapter combines process tracing techniques, using Mouselab, a computer process tracing system, and Brunswik's theory of representative design, as detailed in chapter 3. In doing so this study provides an insight into the process by which individuals make overall justice judgments of naturally occurring situations which are representative of the real world.

Chapter 7: A Process Tracing Study in Organizational Justice

7.1 Introduction

The study detailed within this chapter is designed to gain a deeper insight into the decision making process used by individuals when reaching a judgment of overall fairness. This empirical study builds on the first study presented in chapter 5, and brings together the theory of representative design with a policy capturing and process tracing approach. Process tracing software is utilized in this study in order to better understand the process undertaken by each Judge in deciding how fair a performance appraisal situation is.

This chapter is structured as follows. Firstly, I introduce the research questions and hypotheses. Mouselab is then introduced as the process tracing tool of choice, and instrument development is described in section 7.3. In Section 7.3.2 I introduce the participants who acted as the decision makers in the study, and then describe the decision making task itself (section 7.3.3). The results of the study are then presented and discussed (sections 7.4 and 7.5). Limitations of this study are covered in section 7.6 followed by implications for both practice and research.

7.2 Research Questions and Hypotheses

This study builds on Study 1 in a number of ways. First, this study allows replication of the analysis and findings of Study 1 with a larger sample of participants (n = 49) and a much larger sample of situations ($N = 2744$).

As with policy capturing, a process tracing methodology can be used to identify the individual policy used by each Judge during the task and to conduct within-individual analysis. This study will provide further answers for the first research question posed in Study 1:

> Research question 1: What is the relative importance of each antecedent of justice in determining the overall feeling of justice?

This study uses an on-screen tool, rather than a pen and paper exercise, to display the justice cues and to collect participants' overall justice evaluations across various situations and

their subjective cue use policies. Judges' objective policies derived from statistical regression, and subjective policies as reported by each Judge, can then be compared to ask:

Research question 2: How much insight do people have into their own mental models?

The second study uses a larger sample size than in Study 1. This permits the use of between-individual analysis, to see whether individuals show consensus in decision making, or whether decision making policies vary across individuals. This can shed new insight on the third research question:

Research question 3: Do individuals make justice judgments in similar ways?

In addition to the above research questions, which focus on the decision making policies of individuals, process tracing techniques can be used to monitor the cue acquisition of individuals and to provide details about decision making processes, over and above, decision making policies. By utilizing process tracing methods it is possible to ask; what information do individuals use in their decision making? What search sequences are used to process information? How much information is used in making a judgment? And, how long is an individual exposed to information when forming an overall assessment? (Payne *et al.*, 1993).

Schkade and Johnson (1989) suggest there may be a positive relationship between the amount of time for which a cue is revealed and its final importance to a decision or judgment as "the amount of attention given to a stimulus feature may be related to its salience or importance" (210). Several researchers have shown there to be positive relationships between "stated or inferred importances of an attribute and depth of search of that attribute" (Lehmann and Moore, 1980; 451). More specifically, Holbrook and Maier found that "attribute importance appears to guide search toward the most important attribute-related cues" (1978; 96). If this is the case then it could be assumed that evidence of cue weight will be found in the information search behavior of an individual. That is, relative cue weight will be proportional to the length of time cues were viewed (exposed) and the frequency with which a cue is viewed. Sheluga *et al.* (1979) found both of these process measures correlated with cue importance. As it is expected that individuals

would spend most time looking at information for the cues which are most important to them, the following hypotheses are made:

Hypothesis 1: Time spent revealing an individual cue is positively related to objective (calculated) cue importance.

Hypothesis 2: Frequency of cue acquisition is positively related to objective (calculated) cue importance.

Furthermore, another factor which is said to affect cue weight or importance is the order in which information is viewed and processed. Norman *et al.* (2009) state that reading order can affect cue acquisition, for example Western cultures read left-to-right, and so would likely process available information in that order too. Lohse and Johnson also assert that when reading data from a table individuals regress to "learned spatial patter6ans" (1995; 3), i.e., English readers would process top-to-bottom, left-to-right. Using process tracing software, cues are viewed sequentially and therefore the order they are presented (to be revealed in any order) may have an effect upon the "processing of information and the decision that will be made" (Andersson, 2004), or introduce a problem of response bias (Jacoby *et al.*, 1987). The order in which cues are acquired can affect cognitive processes and memory (Lohse and Johnson, 1996), which is particularly important when information is only made available sequentially.

Previous research has shown that the order in which information is received can influence judgments and decision making (Slovic and Lichtenstein, 1971, Nisbett and Wilson, 1977). In the justice field it has been shown that information received first will have a stronger effect than that received second (Brockner and Wiesenfeld, 1996, Van den Bos *et al.*, 1999). In the process tracing literature this is referred to as *cue depth* (Larcker and Lessig, 1983); the 'deeper' (lower down in order) the cue in the process-tracing task the later it will be considered. Consequently, cue importance diminishes with cue depth (Larcker and Lessig, 1983). In this study, the task is administered to two groups of Judges with the cue order differing between the two. It is hypothesized that:

Hypothesis 3: Depth of cue is negatively related to objective (calculated) cue importance (weight).

The Cognitive Reflection Test (CRT) can distinguish between individuals who process spontaneously and with little attention, and those whose mental operations require "effort, motivation, concentration, and the execution of learned rules" (Frederick, 2005; 26). It is expected that individuals who demonstrate higher levels of cognitive control would take more time to build and define a decision making policy based on the 10 available cues when judging the fairness of each situation. In light of this the following hypotheses are made regarding cognitive control;

Hypothesis 4a: CRT score will be positively related to R^2.

Hypothesis 4b: CRT score will be positively related to time spent on the decision making task.

Hypothesis 4c: CRT score will be positively related to frequency of cue acquisition.

As a second step, I am interested to see if personality traits predict the importance of certain cues in the formation of overall justice judgments. Individuals who are described as having an agreeable personality are sympathetic, kind, appreciative and affectionate and "expect others to be pleasant and likeable and appear to elicit such behavior from their partners" (Graziano and Tobin, 1999; 45).

The trait of agreeableness is concerned with interpersonal relationships, with those high in agreeableness being forgiving, trusting, cooperative and tolerant (Barrick and Mount, 1993). It is therefore expected that these individuals (those who are highly agreeable) are expected to pay close attention to the two non-justice items which concern their anonymous colleagues' relationship with their organization and that colleagues' beliefs about their own appraisal experience. As such the following hypothesis is made;

Hypothesis 5: Agreeableness moderates the relationship between the number of cue repetitions of the non-justice cues and their importance. I expect that individuals who are more agreeable will look at the non-justice cues more often.

The personality trait of conscientiousness differentiates individuals by the "socially prescribed impulse control that facilitates task- and goal-directed behavior" (John and Srivastava, 1999; 30). Individuals who are higher, as opposed to lower, in conscientiousness are therefore expected to differ "in terms of performance expectancy, performance valence, and goal choice" (Gellatly, 1996; 475-476).

Individuals who are high in conscientiousness are those who are organized, thorough, plan ahead and are efficient (Wilt and Revelle, 2009). Therefore it is expected that individuals who are conscientious would make more cue acquisitions to develop a more thorough policy of cue usage before reaching an overall judgment. As "conscientiousness reflects dependability" (Barrick and Mount, 1993; 4) there is an expectation that these individuals are responsible and trustworthy and therefore wish to do a 'good job' whilst completing the task. For this reason, individuals who are higher in conscientiousness are likely to acquire the most information (in terms of cue acquisition) before making an overall judgment. On the other hand, individuals who are low in conscientiousness may not be expected to do such a thorough job or be as hardworking and persevering (Barrick and Mount, 1993) and as a result may collect the least amount of information on which to base their judgment.

Hypothesis 6a: Conscientiousness moderates the relationship between the frequency of cue acquisition and cue importance. Those individuals who are high (versus low) in conscientiousness will acquire more information, i.e., make a higher number of cue repetitions.

The personality trait of conscientiousness, as described above, is expected to be positively related to individual's level of cognitive control. Conscientiousness need not only suggest traits of dependability, but also acts of deliberate intention (Barrick and Mount, 1993) such as being achievement-orientated. Similarly, the cognitive reflection test (see section 5.4.3) can differentiate between those who are able to overcome their initial impulses and answers (which

are often wrong) in order to answer the questions correctly. To score highly on this test, individuals must persevere to do a thorough job and work through the problems carefully to reach a correct solution.

It is expected that individuals demonstrating higher levels of cognitive control (scoring highly on the CRT) would be those who are more highly conscientious. On the other hand, individuals who are less conscientious are in turn anticipated to spend less time on the problem-solving task and thus fall into its 'predictable' wrong answers (Frederick, 2005) and score low on the CRT.

Hypothesis 6b: CRT score will be positively related to conscientiousness.

Process tracing is the ideal methodology for developing further insight into how justice antecedents are used in the formation of a justice judgment (research question 1 – 3), and also the processes used by individuals when reaching a judgment (hypotheses 1 – 6b). This study adopts a process tracing methodology whilst still adhering to a representative design.

7.3 Method

This study uses process–tracing software. Process-tracing software (as discussed in chapter 6) can be used to uncover the "intervening steps that occur between the introduction of informational inputs and the decision outcomes" (Ford *et al.*, 1989; 75). It is ideally suited to extending Study 1 and in doing so inferring an individual's decision making policy with respect to making a judgment about the overall fairness of a performance appraisal.

This study adopts a representative design and process tracing techniques. The representatively designed situations from Study 1 were used also in Study 2. This means that the stimuli used in this study, i.e., the cues and situations presented during the decision making task, are identical to those used in Study 1. The advanced methodological approach used in this second study changes the focus of analysis from decision making policies to decision making processes. The next section describes the process of developing the online instrument that will form the decision making task for the Judges and be used to monitor process behaviors.

7.3.1 Instrument Development

In this study participants were invited to make overall fairness judgments based on the presentation of information about actual performance appraisal experiences of their anonymous colleagues. The instrument was designed using process tracing software called 'MouselabWEB' (Willemsen and Johnson, 2005). This software was presented as a form of computer process tracing system in chapter 6, and shall hereafter be referred to as Mouselab. As Mouselab is used to record the process of information acquisition in decision making, it lends itself to the study of the formation of overall justice judgments.

Using the Mouselab software, I programmed the experimental instrument that would be used to present cues to the Judges, record their response (overall justice judgment), and monitor their information acquisition behavior. This instrument was then made available online so that Judges could participate from any computer with internet access. The instrument was designed to replicate the profile booklets used in Study 1. That is, each screen held information about one performance appraisal situation as experienced by one anonymous colleague, and therefore corresponded with one page of the profile booklets used in Study 1.

There are however, several important differences between this study and the profile booklets completed in Study 1. Firstly, the information was available on screen and, unlike the paper profile booklet the cues were not visible simultaneously. In this way the Judge had to actively engage in finding information on which to base their judgment by using the computer mouse to reveal information sequentially (see section 7.3.3 below). Secondly, once a judgment had been made using Mouselab, and the next situation selected, the Judge was unable to return and amend that decision, and moreover, they could not compare their decision to those made in earlier situations. In the paper booklet participants were able (although not encouraged) to browse through the booklet to control their own consistency. This may have resulted in them making a relative judgment about the situations rather than a judgment about each situation independently. Third, as described below, the response mode is also different in this computerized study. In the profile booklets, overall assessments of fairness were recorded on a continuous scale (or horizontal line), whereas in this study, responses were recorded on a 20 point Likert-scale. It was expected that the use of a Likert-scale would make it easier for Judges to make a more accurate decision about the level of overall fairness for each appraisal situation using the scale anchors.

The basic tools for creating the decision making instrument were available online from the Mouselab website[2]. This software provided the starting point for developing and customizing the instrument using HTML programming language.

Each screen seen by the Judges reflected one performance appraisal situation and could be divided into two sections. The top half of the screen contained (concealed) information about the situation, and the bottom of the screen contained the Likert-scale used to record judgments of overall fairness for each situation. The screenshot in figure 7.1 shows the screen viewed by participants. As the cues could only be revealed one at a time, the Judge had to engage in the decision making process by sequentially revealing information in order to form their judgment. As the 10 cues are listed vertically in list form, it could be assumed that the Judges would start by revealing the answer to the first available cue and then work down the cues. As figure 7.1 shows, each Judge was initially presented with a list of questions and a corresponding "answer box". To reveal the answer, the Judge had to move their mouse pointer over the "answer box" and it would be revealed, as shown in figure 7.2. Once the mouse pointer was moved away, the answer would be concealed again in preparation for the next cue answer to be revealed.

[2] http:\\www.mouselabweb.org

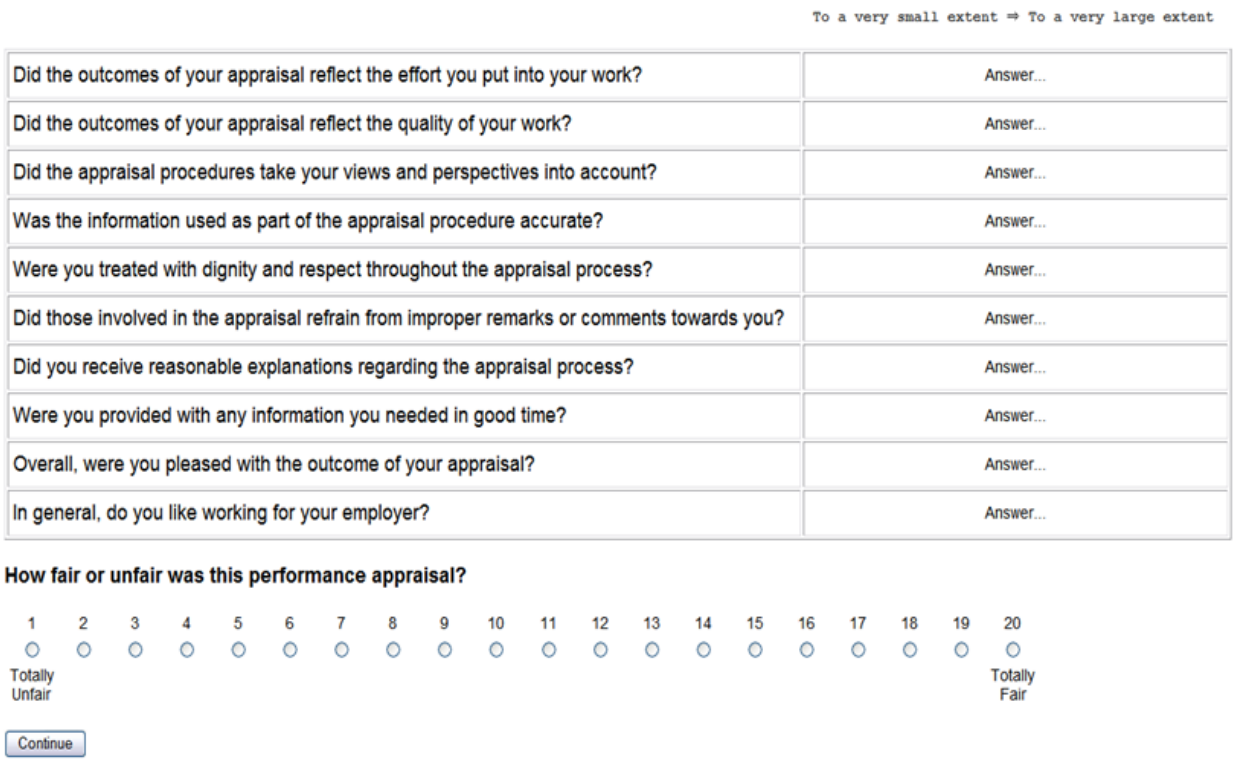


Figure 7.1: Mouselab screenshot - concealed

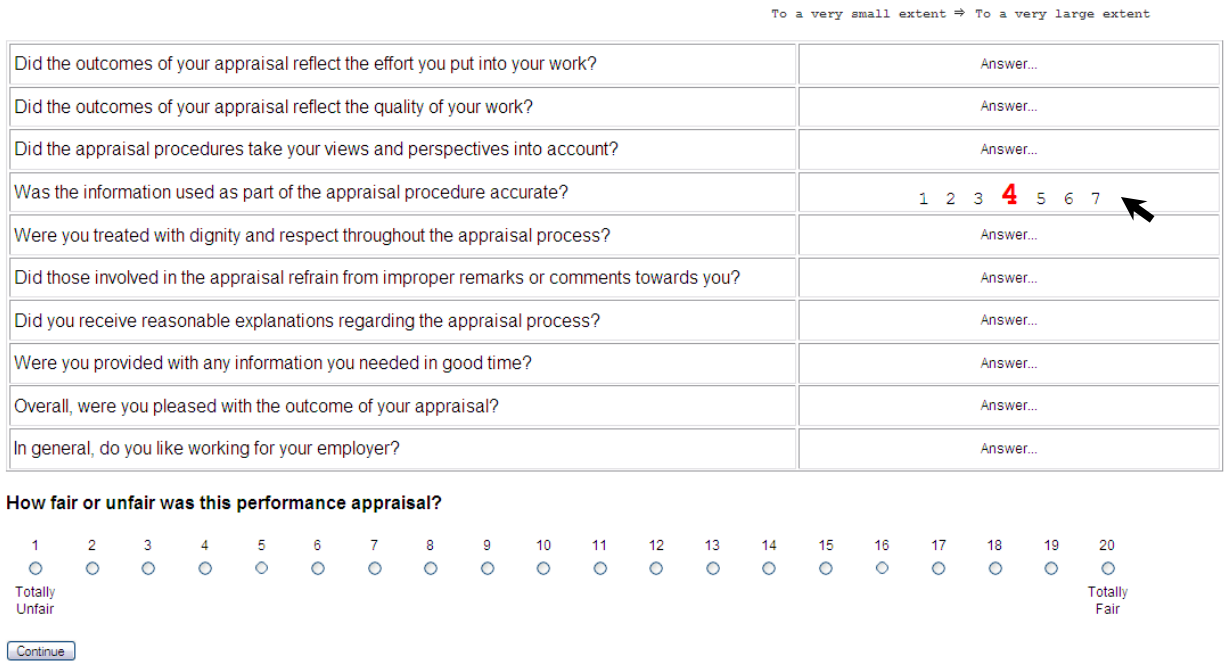


Figure 7.2: Mouselab screenshot – revealed

The response mode at the bottom of each situation is a 20 point Likert-scale which is used to record judgments of overall fairness, with anchors ranging from "totally unfair" to "totally fair" (see figure 7.3). Once a decision had been settled upon, the continue button was used to move on to the next appraisal situation which required a judgment.

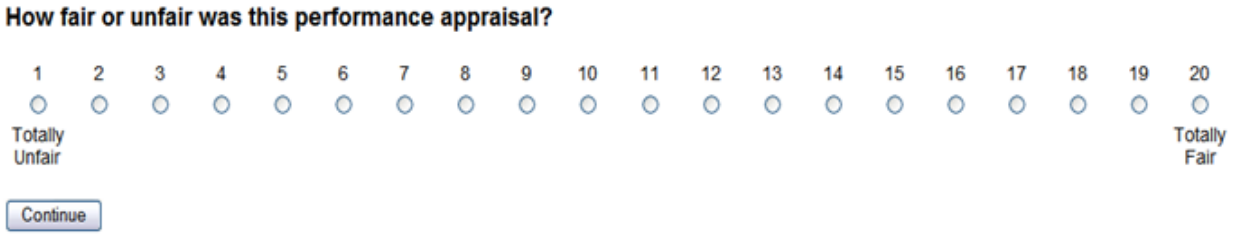


Figure 7.3: Rating scale used to record overall fairness judgment

The software program was developed iteratively, and piloted to confirm the clarity of the instructions page, the design aesthetics and the ease of use for the participant. An annotated example of the full HTML code behind each of the appraisal situations can be found in appendix A. The task and process followed by the Judges is explained in detail below (section 7.3.3).

In order to analyze the information acquisition of Judges, Mouselab records the movements of the mouse made during the evaluation period in an output file. Details of the information captured in the output file for this study can be found in table 7.1.

Output	Description
Profile number	This refers to the individual situation upon which a judgment is made. In order 1 these are profile 1–61, in order 2 these are profile 101-161.
Judge ID	The unique identifier of each Judge.
Event	**Mouseover** – action of mouse pointer being over an answer box to reveal the contents. **Mouseout** – action of mouse pointer being removed from the answer box which conceals the contents.
Cue	Which cue is being revealed? E.g., effort.
Time	Cumulative time spent by the Judge on the task.
Choice	The overall fairness judgment selected on a scale of 0-20 for each profile.

Table 7.1: Mouselab output descriptions

Using the output file, information about the cue acquisition behaviors of individuals can be described using the time taken, the cues used, and the sequence of cue reveals, alongside the final judgment made. The time for which each cue is revealed can be calculated by subtracting the mouseout time from the mouseover time. Any mouseover event (mouse pointer moved over cue) must be followed by a mouseout event (mouse pointer moved away from cue), as once the mouse pointer was moved away from an answer box the cue would again be concealed. Cue acquisition can also be calculated from the output file, be this the frequency of cue reveals by situation or across the task as a whole. Throughout the decision making task Judges could choose to reveal each cue as many times as they wished until they were ready to make their overall fairness rating for each situation, and they could change their rating as often as they wished until progressing to the next situation.

Having introduced the process tracing instrument used during the task to present the situations and record the overall judgment, the participants (Judges) are now introduced.

7.3.2 The Decision Makers --- The Judges

In adherence with representative design, the sample of decision makers who take the role of Judges in this study are from the same population of university administrators used to develop the performance appraisal situations in Study 1. This is crucial to ensure that they have a similar

understanding of the appraisal context and guidelines and also that the cues used during the task may be equally salient to them. In total 49 participants were recruited in the role of Judge. These Judges were from various departments of the university but were all at the level of administrative staff. Descriptive statistics of the 49 Judges over the experimental task for overall fairness judgments are shown in table 7.2 below. The mean overall fairness rating across the 49 Judges was 13.12 on a scale of zero to twenty.

Judge	Min. (0)	Max. (20)	Mean	Judge	Min. (0)	Max. (20)	Mean
CL137	2	15	9.13	**B327C**	3	15	10.64
DF174	2	20	13.75	**BB24M**	3	20	14.02
EL12B	5	20	16.04	**BC24R**	2	20	15.00
GB14M	3	16	11.21	**DA24K**	1	20	14.09
GF15L	2	20	13.25	**ER249**	1	20	15.05
GF17N	1	20	13.27	**ES26C**	5	20	16.66
HR13P	1	20	8.95	**FV269**	3	18	11.77
JR17M	4	20	13.80	**KM23R**	5	18	12.25
K212B	3	20	12.64	**LE26C**	2	20	13.25
K31MP	4	18	12.43	**LK273**	2	20	12.68
LP134	1	20	12.00	**MP236**	1	20	13.73
NL18B	3	20	14.04	**PB2LR**	2	20	12.23
PB173	2	20	14.66	**PN2M3**	1	19	12.88
PC126	2	20	13.88	**QT24M**	2	19	12.20
R31TV	2	20	11.73	**RE24P**	6	27	11.89
R61YV	3	20	11.16	**RS28L**	2	20	11.64
SA1T3	1	20	10.73	**RX233**	1	20	11.11
SK172	2	20	13.52	**SH2L4**	3	19	12.95
TG17B	3	18	9.89	**TY23L**	3	19	14.41
TP1M8	3	20	14.82	**YT297**	9	20	14.75
W31ST	4	19	13.36	**ZA26A**	5	20	13.57
WE14S	5	20	16.29	**ZC274**	2	20	13.23
WH14F	3	20	14.62				
XE1F3	1	20	13.95				
YB174	2	20	15.09				
YK1R3	4	20	14.36				
YP13R	6	20	14.25				

Table 7.2: Judges' overall fairness rating descriptives

Judges were free to either participate at laboratory sessions held at a central location or to arrange a convenient time with the researcher. The sole requirement for completion of the task was access to a computer with internet access. Judges were recruited via emails through a staff emailing list asking interested individuals to sign-up to a laboratory session, or to suggest a time that would be more convenient for them to participate. In addition, the researcher walked around several departments asking individuals in administrative offices if they would be willing to participate and provided a letter detailing the task and contact details to sign-up if they wished to participate. Where Judges were recruited from a different department to the experimental room, permission was granted for the participant to complete the task on their own work desktop computer. Times were arranged so as to not interfere with work schedules and often took place during lunch breaks or after work.

Laboratory sessions were held in a small information technology room with 12 computer terminals. However, no more than 4 participants completed the task at any one time, and each participant sat at distant terminals and completed the task in silence so as not to disturb or influence the judgments of the other participants. Importantly each Judge worked through the task at their own pace. The researcher was present at all laboratory sessions, and for the first 20 minutes of the task if completed at the Judge's own desk. This was necessary to ensure that Judges had the opportunity to ask for clarification and to address any questions or difficulties concerning the instruction page or practice pages before the task started.

Judges participated voluntarily and the experiment lasted approximately 45 minutes. Judges were thanked for their effort and time with a gift voucher. All responses remained confidential and are therefore analyzed by a randomly assigned code assigned to each Judge. Details of the decision making task and instructions given to participants are provided in the next section.

Once the Judge was ready to complete the task they were asked to open internet explorer and were then directed to the webpage that hosted the Mouselab experiment[3]. Judges were

[3] Judges were randomly allocated to either version order 1 or version order 2. At the time of submission the experiment is still available online at http://www.dur.ac.uk/h.c.german/start.html (order 1) and http://www.dur.ac.uk/h.c.german/start2.html (order 2). All screenshots are taken from these sites.

informed that the computerized experiment was split into two distinct parts; first, the decision making task, and second, a subjective policy measure and measures of individual differences.

7.3.3 The Decision Making Task

At the start of the experiment each Judge was allocated a randomly assigned 5 character reference code. This code served two purposes; first, for analysis purposes it linked participants between the two experiment sections, and second, it enabled the researcher to identify the version of task completed.

The task was administered in two different versions across the sample of Judges, which related to the order in which the cues were presented to the participant (however, these could still be revealed in whichever order the Judge desired). The random five character code assigned to each Judge provided the researcher with a method to record which version was completed with the central value being either a 1 or a 2 respectively. Table 7.3 shows the differences between the two versions in terms of the order in which the cues, relating to each justice dimension, were shown. In order 1 the justice dimensions were presented in the order distributive, procedural, interpersonal and informational and then the two additional non-justice cues. In order 2 the order in which the dimensions were presented was altered with the non-justice items remaining last. By administering the task in two orders cue depth can be altered.

Order 1	**Order 2**
DJ	INPJ
PJ	INFJ
INPJ	DJ
INFJ	PJ
Additional cues	Additional cues

Table 7.3: Differences in order 1 and 2

The decision making task consisted of 61 experimental screens covering 56 different situations, or performance appraisal experiences. For reference to how the cues and situations were developed I draw your attention back to section 5.4.1, in Study 1. The task included three repeated profiles which were used as a test of consistency, and two practice profiles. Having

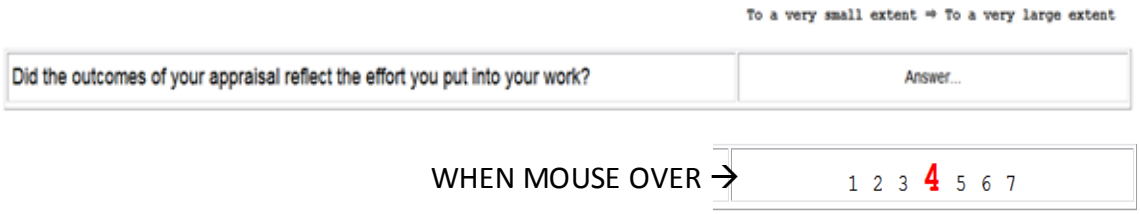
entered their 5 character reference code Judges were asked to read the instruction page (see figure 7.4) on the screen in front of them and when comfortable to complete the two practice situations. The practice pages were important to familiarize the participants with the software and the task, and to control for start-up effects. The Judge was then given the opportunity to ask any questions or seek additional clarification before proceeding with the actual task, which followed exactly the same format as the practice pages.

Instructions

★ On each screen in this study you will see information regarding the performance appraisal experience of one anonymous colleague.

★ Based on this information alone, we want your personal view of how fair or unfair the performance appraisal was.

★ Each of your colleagues was asked 10 questions about their performance appraisal. You will see the questions they were asked, and the answers they gave. This will be given as below:



★ On the left you see the question. On the right there is a box labelled "Answer". If you hover your mouse over this box the answer will be revealed. Please try this now.

★ The large bold red number is the answer your colleague gave on a 7-point scale: 1 = to a very small extent ⇒ 7 to a very large extent.

★ Of course these are subjective responses, but for the purpose of this study we would like you to assume they are objectively true.

★ Once you have considered your colleagues answers, we want you to rate how fair or unfair the performance appraisal was.

★ You will do this using the following 20 point scale ranging from "Totally Unfair" to "Totally Fair":

★ When you have completed each page please click "Continue" to go on.

When you feel comfortable with the instructions, please click the button below.

To start you will have two practice pages.

Continue

Figure 7.4: Mouselab instructions

At first glance each screen/situation appears identical to the Judges, as the responses given to each question are all initially concealed. Each screen only differed regarding the information that could be revealed behind the answer boxes. In this instance, moving the mouse over "answers" reveals one individual's (a Rater's) perception of their own appraisal experience and the extent to which they had agreed to each question asked. Whilst the Rater's responses are subjective the Judge is asked to treat them as being objectively true. Once the mouse was removed from the "answer" box the answer would be concealed. The Judge was therefore required to work sequentially, revealing one "answer" at a time. In this way Mouselab was able to track mouse movements and record all the information accessed as a Judge constructed their judgment about the overall fairness of the appraisals. The 'answers' could be revealed and concealed by the Judge in any order, for as long a time period as desired and could be viewed as many times as necessary before a final judgment for each appraisal was made.

Once the Judge had reached their judgment of overall fairness for a given appraisal situation it was recorded by selecting a point on the Likert-scale ranging from "totally unfair" to "totally fair". Overall ratings could be changed until the continue button was pressed to bring up the next appraisal situation to be judged.

This process was then repeated with the Judge making assessments of the overall fairness of each appraisal experience until reaching the end of the decision making task. This section ended with the three repeated profiles which were not identifiable to the participant as being so. Judges were under no time pressure either to complete the whole task or in making a judgment about each situation. In this study, the purpose was not to force hurried decision making, but to capture the natural time taken by each Judge for each situation, and the amount of time spent looking at individual cues.

At the end of the profile situations, Judges were informed that they had reached the end of the decision making task and should follow the link to part two, which would begin by re-entering their random 5 digit code.

7.3.4 Subjective Policy and Individual Differences

As in Study 1 the decision making task was followed by collection of a Judge's subjective policy and measures of individual difference. This section was completed using an online survey tool called SurveyMonkey, which Judges were directed to by following a link at

the end of the Mouselab task. The same two measures of a Judge's subjective decision making policy as used in Study 1 and introduced in section 5.4.3 were used, followed by the three item CRT measure of cognitive control.

In order to test for individual differences and variation between individuals two personality measures were administered – agreeableness and conscientiousness. Agreeableness is measured using 8 items, which had a Cronbach alpha of 0.71, and conscientiousness is measured using 9 items with a Cronbach alpha of 0.85. Table 7.4 and 7.5 below show each of the scale items and reverse items are indicated (R).

Measure	**Item** *"I see myself as someone who..."*
Agreeableness (alpha = 0.71)	1. Tends to find fault with others (R) 2. Starts quarrels with others (R) 3. Has a forgiving nature 4. Is generally trusting 5. Can be cold and aloof (R) 6. Is considerate and kind to almost everyone 7. Is sometimes rude to others (R) 8. Likes to cooperate with others

Table 7.4: Agreeableness measure

Measure	Item *"I see myself as someone who..."*
Conscientiousness (alpha = 0.85)	1. Does a thorough job 2. Can be somewhat careless (R) 3. Is a reliable worker 4. Tends to be disorganized (R) 5. Tends to be lazy (R) 6. Perseveres until the task is finished 7. Does things efficiently 8. Makes plans and follows through with them 9. Is easily distracted (R)

Table 7.5: Conscientiousness measure

Of course, these measures of agreeableness and conscientiousness are higher order factors of personality and therefore they do not provide as much information as more descriptive lower hierarchical representations (John and Srivastava, 1999). However, the purpose of using these measures it to distinguish between personality traits, rather than to provide a fully comprehensive representation of individual differences – a feat not possible using higher order factors (Goldberg, 1993).

The use of a taxonomy of personality measures is a necessary step in order to keep scales short to minimize adverse effects such as boredom and fatigue which may result from extensive scale items (Burisch, 1984). In the case of this study, which adopts a policy-capturing design, which is itself cognitively intensive for participants and a task which lasts considerably longer than standard correlational survey studies, the use of a concise measure is appropriate for identifying individual differences which may arise between the judgment processes used by Judges.

7.4 Analysis

Overall judgments made by each Judge for each profile in the experimental task were extracted from the Mouselab data and were used in linear multiple regressions to calculate the

squared multiple-correlation coefficient (R^2) for each of the 49 Judges. The R^2 for each Judge is displayed in table 7.6, alongside the standardized betas for each Judge. Four of the 49 Judges had no statistically significant cues in their decision making policies at the $p=<0.05$ level.

Judge	R^2	Effort	Quality	Views	Infacc	Dignity	Remarks	Explanations	Inftime	Pleased	Like working
CL137	0.220	-0.192	0.028	-0.240	0.119	-0.148	0.064	0.174	0.403*	-0.063	0.310
DF174	0.871	0.038	0.240*	0.215	0.126	0.163	0.065	0.093	0.061	0.135	0.020
EL12B	0.818	0.387*	0.146	0.030	-0.026	-0.097	-0.203	0.141	0.314*	0.256	-0.019
GB14M**	0.166	-0.233	-0.326	0.203	-0.006	0.106	-0.086	-0.086	0.288	0.186	-0.089
GF15L	0.982	0.103*	0.117*	0.341*	0.331*	-0.015	-0.047	0.033	0.054	0.186*	0.020
GF17N	0.822	0.125	0.239*	0.280*	0.247*	0.038	-0.187	0.008	0.224*	-0.033	0.148
HR13P	0.549	0.162	0.272	0.208	-0.171	-0.160	0.037	0.428*	0.159	-0.128	0.040
JR17M	0.855	0.104	0.135	0.330*	0.115	0.092	-0.270*	0.252*	0.207*	0.062	0.007
K212B	0.819	0.153	0.048	0.222	0.146	0.053	0.131	0.121	0.065	0.053	0.166*
K31MP	0.830	0.044	0.433*	0.221	0.091	0.081	-0.103	-0.003	0.248*	0.000	0.124
LP134	0.915	0.156	0.329*	0.324*	0.058	-0.149	-0.044	0.253*	-0.031	0.185	-0.068
NL18B	0.833	0.048	0.168	0.130	0.226	-0.015	0.020	-0.148	0.281*	0.277	0.115
PB173	0.909	0.175	0.072	0.218*	0.224*	0.152	-0.068	0.066	0.209*	0.086	-0.011
PC126	0.846	-0.141	0.054	0.085	0.228*	0.011	0.071	0.316*	0.239*	0.212	0.009
R31TV	0.813	0.202	0.423*	0.280*	0.216	-0.140	-0.148	0.171	0.220*	-0.242	-0.042
R61YV**	0.864	0.168	0.181	0.170	0.161	0.153	-0.128	0.128	0.071	0.132	0.105
SA1T3	0.721	0.440*	0.230	0.168	0.160	-0.198	-0.202	0.206	0.072	-0.070	0.034
SK172	0.723	0.145	0.171	0.140	0.348*	-0.068	-0.023	0.237	0.052	-0.039	0.032
TG17B	0.752	0.353	0.212	-0.102	0.173	-0.030	-0.065	0.199	0.189	-0.247	0.481*
TP1M8	0.699	0.478*	0.117	-0.085	0.123	0.120	0.023	-0.034	0.204	-0.044	0.164
W31ST	0.842	0.312*	0.278*	0.196	0.186	-0.023	-0.019	-0.040	0.344*	-0.178	0.021

Judge	R^2	Effort	Quality	Views	Infacc	Dignity	Remarks	Explanations	Inftime	Pleased	Like working
WE14S	0.749	0.187	-0.319*	0.359*	0.606*	-0.054	-0.214	0.333*	-0.034	-0.081	-0.025
WH14F	0.765	0.031	-0.008	0.039	0.260	0.293*	-0.019	0.204	0.188	0.005	0.093
XE1F3	0.858	0.264	0.098	0.090	0.285*	-0.155	-0.009	0.126	0.025	0.257	0.049
YB174	0.867	0.346*	0.202*	0.037	0.021	-0.006	-0.080	0.158	0.039	0.380*	-0.191*
YK1R3	0.898	0.054	0.168	0.250*	0.285*	0.112	-0.102	0.253*	0.070	-0.038	0.129*
YP13R	0.851	0.394*	-0.061	-0.172	0.400*	0.072	-0.235*	0.223*	0.173	0.092	0.194*
B327C	0.629	-0.241	0.069	0.432*	0.228	-0.066	-0.089	0.297*	0.182	0.122	-0.225*
BB24M	0.881	0.105	0.184*	0.373*	0.138	-0.014	-0.018	0.161	0.114	0.003	0.104
BC24R**	0.752	0.089	0.147	0.223	0.146	0.047	0.071	-0.063	0.159	0.203	0.017
DA24K	0.851	0.014	0.021	0.218	0.619*	0.094	-0.059	0.093	0.134	-0.090	-0.031
ER249	0.901	0.007	0.094	0.169	0.131	-0.094	-0.015	0.147	0.210*	0.415*	0.018
ES26C	0.808	-0.078	0.063	-0.173	0.276*	0.248*	-0.073	0.167	0.322*	0.260	0.047
FV269	0.866	0.272	0.013	0.299*	0.146	0.066	0.039	0.097	0.129	-0.010	0.085
KM23R	0.681	-0.251	0.392*	0.197	0.176	-0.069	-0.132	0.174	0.282*	0.131	0.069
LE26C	0.916	0.338*	0.206*	0.225*	0.070	0.036	-0.059	0.055	0.056	0.148	0.022
LK273	0.917	0.196	0.015	0.151	0.405*	0.001	-0.089	0.119	0.199*	0.030	0.113*
MP236	0.542	0.151	-0.110	0.066	0.046	0.403*	-0.387*	0.639*	-0.001	-0.198	0.130
PB2LR	0.779	0.329	-0.022	0.058	0.341*	0.133	-0.192	0.116	0.477*	-0.291	0.053
PN2M3	0.905	0.107	0.112	0.479*	0.351*	-0.058	-0.073	0.038	-0.048	0.100	0.016
QT24M**	0.191	-0.206	0.022	-0.172	-0.094	-0.197	0.235	0.100	-0.215	0.208	-0.167
RE24P	0.384	0.212	-0.054	-0.010	0.278	0.351	-0.179	-0.003	-0.331	0.007	0.383*

Judge	R^2	Effort	Quality	Views	Infacc	Dignity	Remarks	Explanations	Inftime	Pleased	Like working
RS28L	0.864	0.255	0.337*	0.205	0.203	0.020	-0.175	0.070	0.015	0.032	0.105
RX233	0.913	0.197	0.438*	0.319*	0.112	-0.093	-0.171*	0.257*	-0.023	-0.060	0.089
SH2L4	0.928	0.055	0.286*	0.057	0.136	0.028	-0.020	0.241*	0.151*	0.204*	0.037
TY23L	0.957	0.257*	0.107	0.067	0.189*	0.222*	-0.129*	0.159*	0.101*	0.196*	-0.046
YT297	0.840	0.353*	-0.005	0.012	0.469*	0.078	-0.145	0.170	-0.108	-0.003	0.287*
ZA26A	0.920	0.281*	0.111	0.212*	0.041	0.184*	-0.098	0.127	0.234*	-0.011	0.119*
ZC274	0.861	-0.133	0.318*	0.187	0.054	-0.021	-0.100	0.153	0.259*	0.316*	0.089

*Correlation is significant at the 0.05 level (2-tailed)

** No statistically significant cues at p=<0.05

Table 7.6: R^2 and standardized beta weights

Squared multiple correlation coefficients between the 10 cues and the overall judgment has an average of 0.78, ranging from 0.16 to 0.98. A high R^2 can be attributable to the use of representative design and the thoroughness of the stages followed in building the justice items. This process ensured that the items used were relevant and comprehensive for the sample and the situation.

There is a moderate statistically significant relationship (0.48, p=0.01) between Judge R^2 and the number of statistically significant cues reported by each Judge. Judge TY23L has an R^2 of 0.96 and 7 statistically significant (p=<0.05) cues, whilst four Judges had no statistically significant cues. The modal significant cues related to information being provided in good time (n=19), that the appraisal reflected the quality of work done (n=16) and information accuracy (n=16). At the other end, the least popular significant cues were the interpersonal items of refraining from improper remarks and comments (n=5) and being treated with dignity and respect (n=5).

7.4.1 Relative Cue Weights

Figure 7.5 provides a graphical illustration of the relative weightings of each of the 10 cues for the Judges as a whole. Collective cue weight assigned by each Judge to each cue is indicated by the length of each bar, the longest bar indicating the most salient cue. The average relative weights, in order of importance, for each cue are information received in good time (15.21%), information accuracy (14.39%), quality (13.04%), views (12.29%), explanations (11.68%), like working (9.56%), effort being taken into account (7.76%), being treated with dignity and respect (5.58%), being pleased with the outcome (5.56%) and that the appraiser refrained from improper remarks or comments (4.92%).

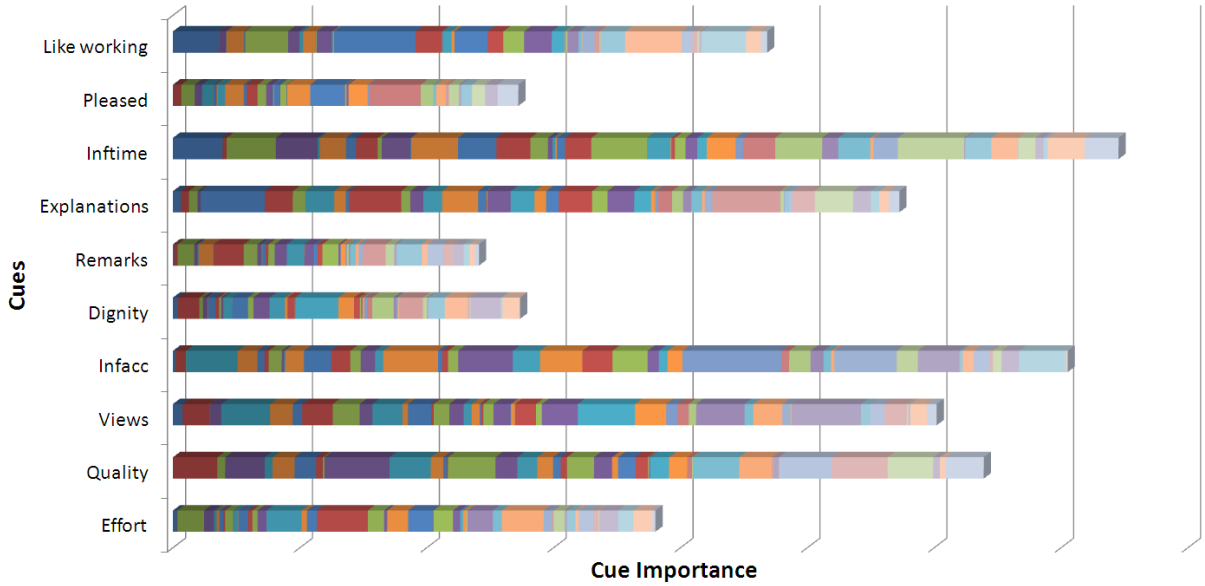


Figure 7.5: Relative cue weightings (49 Judges)

The most salient cues for this sample of 49 Judges are that information is received in good time, that the appraisal is based on accurate information, that the quality of work is reflected in the outcomes of the appraisal, and that the appraisee's views and perspectives are taken into account during the appraisal process. Pooled standardized regression coefficients show that for this sample of 49 Judges, the four most salient cues account for 55% of variance in overall fairness, rising to 67% when a fifth cue is added.

Those cues relating to interpersonal justice (those involved in the appraisal refraining from improper remarks or comments and being treated with dignity and respect during the appraisal process) alongside being pleased with the appraisal outcome are the least salient in influencing a fair judgment of a performance appraisal amongst the Judges, with the interpersonal justice cues contributing 10.5% toward variance in overall fairness. The relative importance of cues in relation to the justice dimension they measure (two cues for each of the four justice dimensions) is shown in table 7.7 below.

As evident in figure 7.5, the results from Study 2, confirm an unequal weighting of importance assigned to cues by the Judges. To determine whether unequal weightings of cues were able to explain more of the variance in overall justice judgments than equal cue weights (as per traditional justice scales such as Colquitt (2001)), regressions were repeated for all 49 Judges assigning an equal weight for each cue. As found in Study 1, for this sample of Judges, the R^2

was lower when equally weighted cues were used, signifying unequal cue weights explain more of the overall justice judgment than equal cue weights. The use of unequal weights provides a superior fit to individual's policies as it is able to account for within-individual differences in relative weights (as illustrated in figures 7.11 – 7.60).

7.4.2 Task Order 1 and 2

The decision making task was administered in two versions, the difference being the order in which the cues were listed for the participant. Importantly, the reveal and conceal of one answer box at a time meant that the Judge was still able to reveal the cues in whichever order they wished, and the process of decision making could be traced.

The administration of two different versions was used to establish if the objective weighting of cues was affected by the order in which the participant may have been exposed to the information. Whilst Judges could reveal the cues in any order, it was considered likely that they would reveal the cue at the top of the list first and work their way down through the others.

A graphical illustration of the relative importance of the 10 cues when administered in order 1 and order 2 are shown in figures 7.6 and 7.7 below.

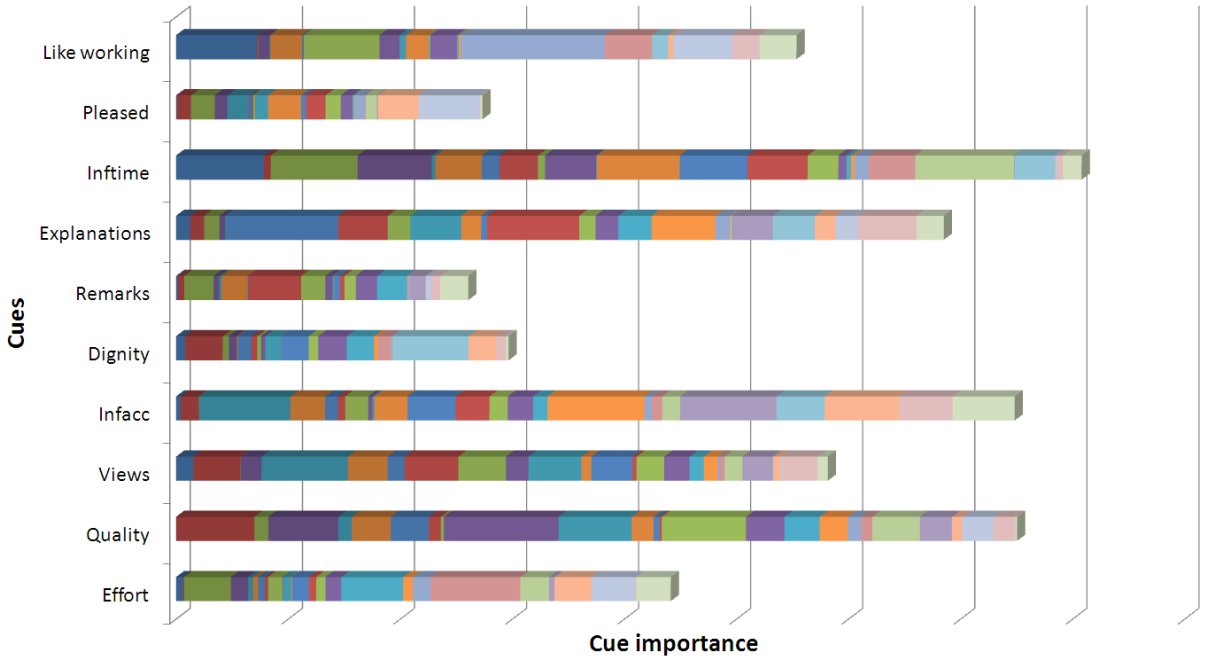


Figure 7.6: Relative cue weights (order 1)

The relative cue weights for Judges assigned to task order 1, in order of importance were; information received in good time (14.97%), outcomes reflected quality of work (13.90%), appraisal based on accurate information (13.86%), reasonable explanations regarding the appraisal process (12.69%), views and perspectives taken into account during the appraisal (10.77%), like working for employer (10.25%), that the outcome of the appraisal reflected the effort put into work (8.18%), being treated with dignity and respect (5.50%), being pleased with the appraisal outcome (5.06%) and that the appraiser refrained from improper remarks or comments during the process (4.83%).

Judges who completed the order 1 task did not weigh either the first or last cues as most important to their overall judgments. Likewise the first and last cues available were not the most salient for Judges administered version 2 of the task.

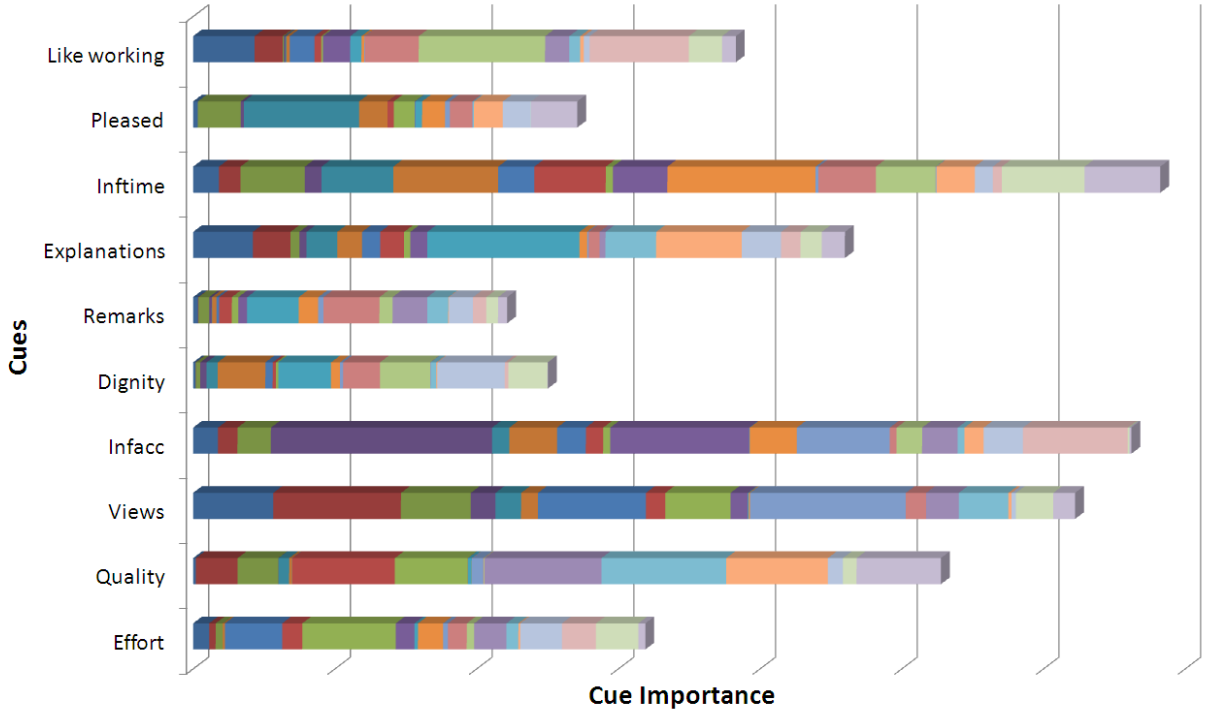


Figure 7.7: Relative cue weights (order 2).

Relative cue weights of Judges completing the task in order 2 were; information received in good time (15.51%), appraisal based on accurate information (15.05%), views and perspective

taken into account (14.14%), the quality of work being reflected in the appraisal outcome (11.99%), that reasonable explanations were given regarding the appraisal process (10.45), like working for employer (8.70%), the outcome of the appraisal reflecting the effort of work done (7.25%), being pleased with the outcome (6.16%), being treated with dignity and respect (5.69%) and that the appraiser refrained from improper remarks or comments during the appraisal (5.04%).

Each of the four justice dimensions (distributive (DJ), procedural (PJ), interpersonal (INPJ) and informational (INFJ)) was represented in the task by two cues. Table 7.7 below shows the combined importance of the cues for each dimension. Across the 49 Judges, the procedural justice cues were objectively the most important to an overall fairness judgment.

	49 Judges	**Task Order 1**	**Task Order 2**
Most important (highest weight)	PJ	INFJ	PJ
	INFJ	PJ	INFJ
	DJ	DJ	DJ
Least important (lowest weight)	INPJ	INPJ	INPJ

Table 7.7: Which justice dimension is weighted as most important?

Interpersonal justice cues, namely, that the appraisee was treated with dignity and respect during the appraisal process and that those involved in the process refrained from improper remarks or comments, were the least weighted cues across the 49 Judges (and in both task orders) and thus contributed least to overall justice judgments. This is not to say that a performance appraisal will be fairly judged in the presence of unjust interpersonal treatment. Their lack of importance may be attributed to the presentation of the cues. The interpersonal cues had the highest mean values (6.3 and 5.9 from 7) and the lowest variance (1.1 and 1.4) amongst the 10 cues. Other things being equal, existing research has shown that Judges will "focus their attention on the more highly variable cues" (Slovic and Lichtenstein, 1971; 685), and thus where there is little variability Judges would be expected to assign less attention to this cue than where there is large variance (for more explanations see discussion section 7.5).

A t-test was conducted for each of the cues to compare the weights for Judges administered the task in order 1 and those in order 2. For each of the 10 cues there was no significant difference in weights between the two orders. The magnitude of the differences in the means was very small ranging from eta square 0.0001 to 0.0168; less than 2% of variance in cue weight is explained by task order. The graph presented in figure 7.8 shows the relative importance of each cue for the two task orders side by side. For this sample of Judges there are no noteworthy effects regarding the order in which the task was administered to the Judges. The decision making process was not influenced by the order in which information was presented; rather, the importance of individual cues was stronger than the order in which they were presented.

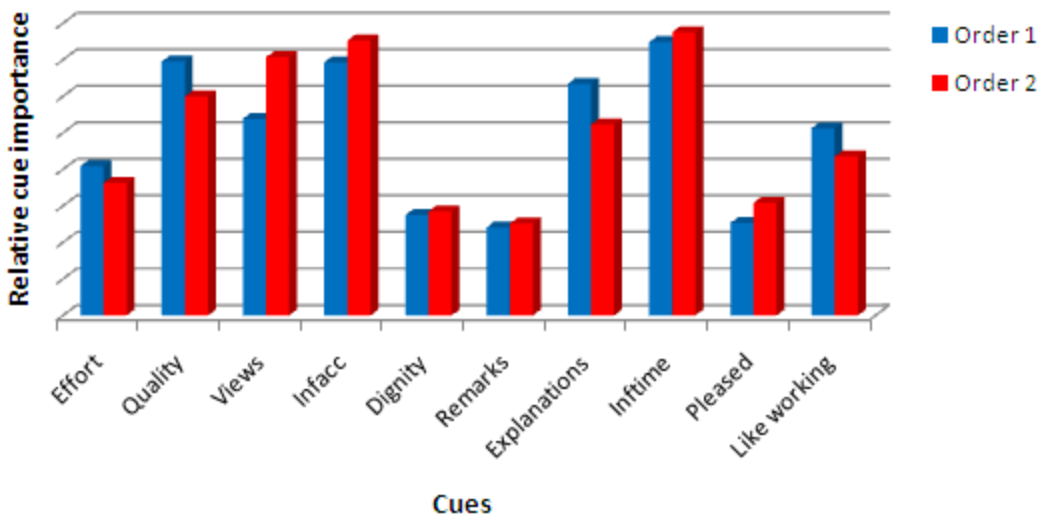


Figure 7.8: Relative cue importance by task order

7.4.3 Judges' insight into their own mental models

Judges R^2 values ranged from 0.16 to 0.98, with an average of 0.78. On average, therefore, the 10 cues were being used to explain around 78% of the variance in the overall judgments.

On closer inspection, 81.6% of Judges (40/49) had an R^2 of greater than 0.7, with 92% of Judges (45/49) having an R^2 greater than 0.5. The 10 cues developed during Study 1 as a shorter fit-for-purpose scale for measuring overall justice were appropriate for exploring the process of

reaching a justice judgment for this second larger sample of Judges from the same population of university administrators.

Three Judges had particularly low R^2 values (<0.25). These Judges may have not understood the task correctly, despite being given the opportunity to ask for clarification of procedure or raise any questions they may have had after the practice pages had been completed. These Judges may have found the task too difficult as each piece of information could only be viewed independently, and they may have been unable to develop a consistent line of reasoning for their decision making across the different situations.

The R^2_{Press} statistic (as described in study 1) was calculated for each Judge to cross-validate with the Judges' R^2, as shown in table 7.8.

Judge	R^2	R^2_{Press}	$R^2 - R^2_{Press}$	Judge	R^2	R^2_{Press}	$R^2 - R^2_{Press}$
CL137	0.22	0.17	0.05	**B327C**	0.63	0.54	0.09
DF174	0.87	0.79	0.08	**BB24M**	0.88	0.81	0.07
EL12B	0.82	0.71	0.10	**BC24R**	0.75	0.64	0.11
GB14M	0.17	0.14	0.03	**DA24K**	0.85	0.76	0.09
GF15L	0.98	0.97	0.01	**ER249**	0.90	0.84	0.06
GF17N	0.82	0.75	0.07	**ES26C**	0.81	0.71	0.10
HR13P	0.55	0.44	0.11	**FV269**	0.87	0.80	0.07
JR17M	0.86	0.71	0.14	**KM23R**	0.68	0.53	0.15
K212B	0.82	0.74	0.08	**LE26C**	0.92	0.86	0.06
K31MP	0.83	0.74	0.09	**LK273**	0.92	0.86	0.06
LP134	0.92	0.87	0.05	**MP236**	0.54	0.42	0.12
NL18B	0.83	0.74	0.09	**PBZLR**	0.78	0.65	0.13
PB173	0.91	0.87	0.04	**PN2M3**	0.91	0.84	0.07
PC126	0.85	0.74	0.11	**QT24M**	0.19	0.14	0.05
R31TV	0.81	0.69	0.12	**RE24P**	0.38	0.30	0.08
R61YV	0.86	0.82	0.04	**RS28L**	0.86	0.78	0.08
SA1T3	0.72	0.61	0.11	**RX233**	0.91	0.85	0.06
SK172	0.72	0.60	0.12	**SH2L4**	0.93	0.88	0.05
TG17B	0.75	0.65	0.10	**TY23L**	0.96	0.93	0.03
TP1M8	0.70	0.60	0.10	**YT297**	0.84	0.77	0.07
W31ST	0.84	0.73	0.11	**ZA26A**	0.92	0.87	0.05
WE14S	0.75	0.66	0.09	**ZC274**	0.86	0.78	0.09
WH14F	0.77	0.66	0.10				
XE1F3	0.86	0.77	0.08				
YB174	0.87	0.81	0.06	**Avg.**	0.78	0.70	0.08
YK1R3	0.90	0.83	0.07	**Min.**	0.17	0.14	0.01
YP13R	0.85	0.78	0.07	**Max.**	0.98	0.97	0.15

Table 7.8: R^2_{PRESS} statistic

The R^2_{Press} statistic ranges from 0.14 to 0.97, and the average across the 49 Judges is 0.70. When the R^2_{Press} value is subtracted from the R^2 the resulting value is a true evaluation of the explanatory power of the 10 cues when each observation value is predicted using *n*-1.

The average loss in predictive power is 8.12% from the mean original variance of 78%. The percentage drop in R^2 ranged from 15.48% to 1.43%. The largest drop, for Judge KM23R took the variance explained by the 10 cues for this Judge to 53%, and the smallest drop was for Judge GF15L whose R^2 value dropped a little over 1% to 0.97. There is no statistically significant correlation between R^2 and the loss in variance, or between an individuals' level of cognitive control and loss in variance. Overall, the 10 cues used to determine an overall assessment of fairness are, even when predictive error is removed, strong predictors in explaining 70% of variance in the overall judgment.

7.4.3.1 Cognitive Reflection Test

As a measure of cognitive control, the CRT test is used as a measure of individual difference between Judges. Individuals who score highly were more cognitively aware and able to override initial impulses to think through a situation before reaching a judgment, compared to those who have a low score and would likely make a judgment based on their initial assumptions or impulse (Frederick, 2005). Possible CRT scores ranged from 0 to 3, with 3 indicating higher levels of cognitive control. The average score for the 49 Judges was 1 out of 3. There is a positive moderate association between CRT score (level of cognitive control) and R^2 ($r=0.35$, $p=0.01$) indicating that individuals with a lower level of cognitive control also had a lower R^2. This is expected as Judges with a low R^2 are more likely to form a judgment without a distinct policy, and individuals with lower levels of cognitive control are more likely to make a judgment based on impulse than to pay attention to particular cues.

The average R^2 for Judges scoring less than 2 on the CRT was 0.74 which rose to 0.85 for the remaining Judges who demonstrated higher levels of cognitive control by scoring 2 or 3 on the CRT test (see figure 7.9).

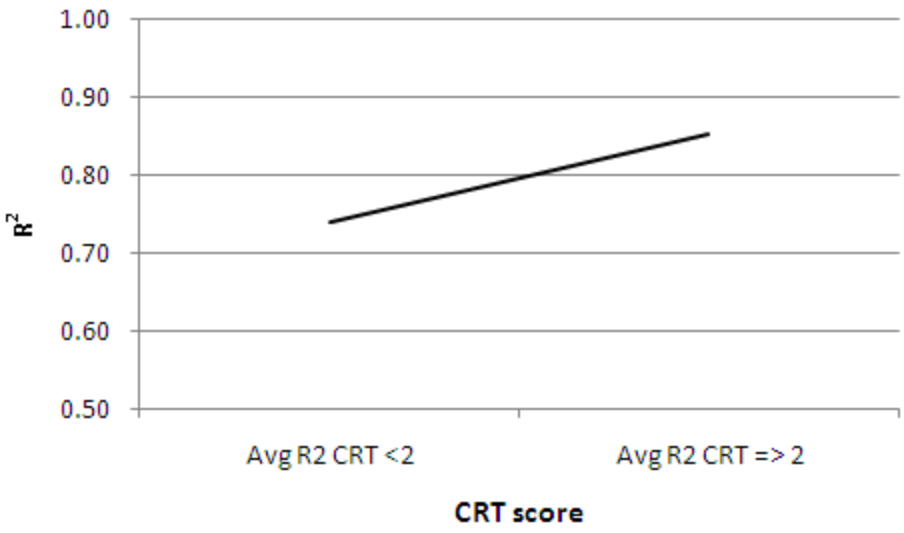


Figure 7.9: Judge CRT score and R^2

The Judge's CRT score also had a medium positive correlation with the total number of cue repetitions, or cue acquisition, used by a Judge (r=0.42, p=0.003). As shown in figure 7.10, individuals who are more cognitively in control (had a CRT score of >2) pay more attention to the formation of an overall fairness rating rather than acting on impulse. These Judges are also more likely to spend longer collecting information to assist them in the formation of their judgments. However there was no statistically significant relationship between CRT score and time spent on the task for the sample of 49 Judges.

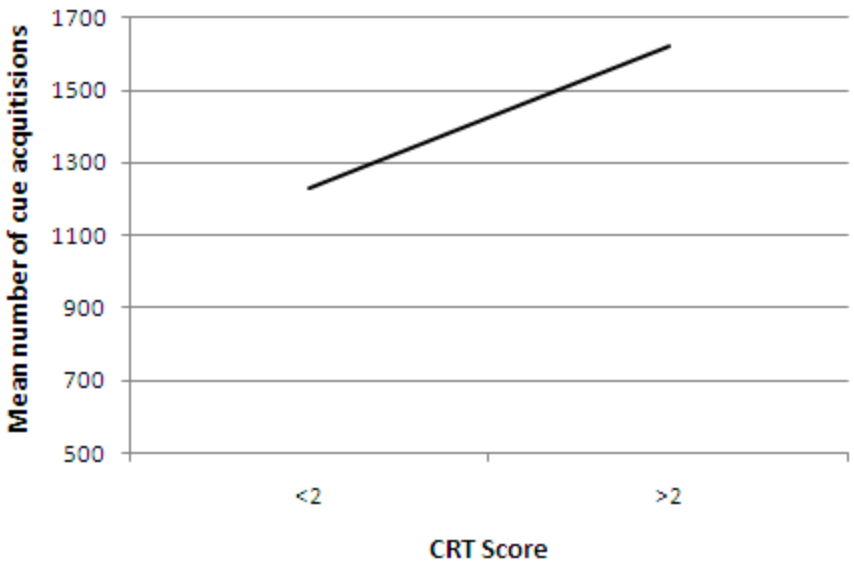


Figure 7.10: Mean number of cue acquisitions by level of cognitive control

7.4.3.2 Judge Consistency

Three repeated performance appraisal situations were included at the end of the decision making task. Judges were unaware that these three situations had been judged earlier in the task, and this provided a measure of consistency of judgment across situations.

Correlation coefficients for the three pairs of repeated appraisal situation were all strongly correlated, as shown in table 7.9.

		Profile 7b	Profile 8b	Profile 9b
Profile 7	Pearson Correlation	.608**		
	Sig. (2-tailed)	.000		
	N	49		
Profile 8	Pearson Correlation		.565**	
	Sig. (2-tailed)		.000	
	N		49	
Profile 9	Pearson Correlation			.570**
	Sig. (2-tailed)			.000
	N			42

**Correlation is significant at the 0.01 level (2-tailed)

Table 7.9: Correlation between first and repeated situations

Paired samples t-test between the situation itself and the repeated situations were conducted for each of the three repeated profiles. Between the first and second pairs of situations there was no statistically significant difference, however, for the third pair, there was a statistically significant decrease, albeit small, in overall fairness rating from the original situation (M=16.98, SD=3.127) to the repeated situation (M=15.79, SD=3.104), $t(41)=2.669$, p=0.011. Overall the 49 Judges demonstrated consistency in making overall justice judgments across situations.

7.4.3.3 Objective and Subjective Policies

So far, the analysis section has concerned regressions and cue weights derived objectively from analysis of individual decision making behavior. In addition to this derived policy, policy capturing permits exploration and analysis into the self-insight of individuals; that is, the ability of a Judge to reflect on their own decision making behavior, which we call a Judge's subjective decision making policy.

A Judge's subjective decision making policy is a reflection by the Judge (decision maker) as to the manner in which they felt that they had reached their judgments of overall fairness based on the 10 cues. As discussed in the methodology, this subjective judgment was collected in two ways; first Judges rated the absolute importance of each individual cue, and second, they

ranked the individual cues in order of their importance for making an overall judgment. At the individual level, the difference between a Judge's objective and subjective policies is used as a proxy for an individual's level of self-insight into their own decision making policy.

Self-insight taken across the 10 cues by subtracting subjective ranks of cue importance (as a percentage) from objective cue weights (% cue importance) resulted in negative scores for 15 of the Judges. This indicates that they were overestimating the importance of the cues they used in their decision making, as their objective policies were less than their subjective ones. On the other hand, 34 Judges had a positive score indicating the reverse. These Judges were underestimating the importance of the individual cues they had used during the process of reaching a judgment, as their objectively ranked cues were larger than their subjectively ranked cues. For the most part Judges were underestimating the importance of the individual cues that were used to form an overall justice judgment.

In order to correlate agreement between the subjective and objective policies all measures were first converted to identical 10 point rankings in order that they were comparable. Spearman's Rank Order correlations between objective and subjective policies were then computed and are shown in table 7.10.

Judge	Objective V Subjective Rate	Objective V Subjective Rank	Subjective Rate V Subjective Rank
CL137	0.474	0.511	0.280
DF174	-0.181	0.067	0.161
EL12B	0.014	-0.115	0.884**
GB14M	0.184	0.115	0.921**
GF15L	0.81**	0.782**	0.988**
GF17N	-0.402	-0.079	0.337
HR13P	0.347	0.285	0.874**
JR17M	0.611	0.661*	0.989**
K212B	0.071	-0.159	0.037
K31MP	0.356	0.333	0.953**
LP134	0.435	0.261	0.522
NL18B	-0.248	0.115	-0.210
PB173	0.483	-0.612	-0.922**
PC126	0.275	-0.115	-0.881**
R31TV	0.052	0.297	0.749*
R61YV	-	0.248	-
SA1T3	0.665*	-0.539	-0.767**
SK172	0.833**	-0.818**	-0.840**
TG17B	0.158	-0.006	-0.039
TP1M8	0.405	-0.221	0.261
W31ST	0.266	0.164	0.342
WE14S	0.355	0.673*	0.7232*
WH14F	0.342	0.224	0.570
XE1F3	0.351	0.406	0.841**
YB174	0.667*	0.333	0.843**
YK1R3	0.547	0.515	0.846**
YP13R	0.424	0.430	0.898**
B327C	0.652*	0.758*	0.811**
BB24M	-0.105	-0.055	0.576

BC24R	-0.165	0.164	0.767**
DA24K	0.972**	0.976**	0.972**
ER249	0.151	0.152	0.806**
ES26C	0.594	0.539	0.719*
FV269	-0.123	-0.207	-0.618
KM23R	-0.234	-0.006	-0.727*
LE26C	0.519	0.297	0.74*
LK273	0.022	0.237	0.812**
MP236	0.234	0.012	0.601
PBZLR	0.300	0.176	0.719*
PN2M3	0.644*	0.746*	0.853**
QT24M	0.311	-0.324	-0.229
RE24P	0.025	0.278	0.570
RS28L	0.586	0.661*	0.898**
RX233	0.417	0.152	0.888**
SH2L4	0.439	0.261	0.75*
TY23L	0.343	0.503	0.89**
YT297	-0.156	-0.224	0.701*
ZA26A	-0.347	0.455	-0.860**
ZC274	0.137	0.067	0.716*
Min.	-0.402	-0.818	-0.922
Max.	0.972	0.976	0.989

*Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 7.10: Spearman Rank Order Correlations

Correlations between a Judge's objective and subjective policies varied greatly yet were not explained by individual performance on the CRT test. This is surprising as it was anticipated that individuals who displayed greater cognitive reflection skills would be better able to predict their own policy in terms of the cues they used to reach their judgments, but this was not the case. The three Judges who were best able to reflect on the importance of cues in their decision

making policy are Judges GF15L, DA24K and PN2M3 (scoring 2, zero and zero respectively in the CRT test). This can be seen graphically in the individual Judge graphs found in figures 7.11-7.60 below.

These correlations were then transformed to z' scores using Fishers' transformation (Lane, 2007) in order to take the average correlation across the 49 Judges. This is a necessary step to ensure that "sampling distributions are approximately normal" (Pallant, 2007). These averages were then converted back to r and are reported in table 7.11. The average was taken for only 48 Judges as Judge R61YV failed to rate the importance of the cues used and thus this was omitted from further self-insight analysis.

	Objective V Subjective Rate	**Objective V Subjective Rank**	**Subjective Rate V Subjective Rank**
Average (r)	0.332	0.237	0.583

Table 7.11: Objective and subjective policy correlation

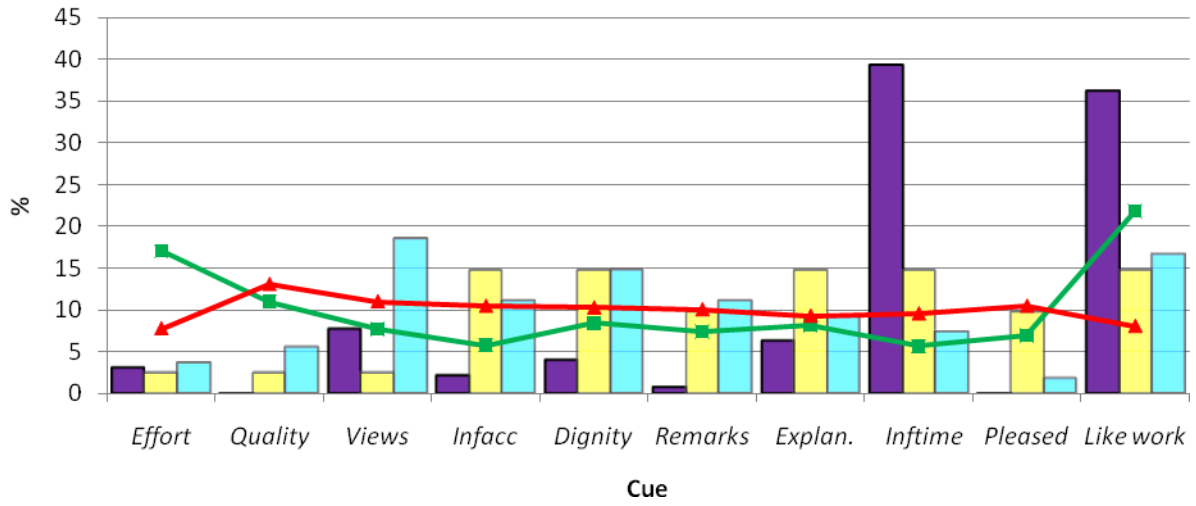
Overall, correlation between Judges' subjective and objective policies is very low; subjective rank and objective policies correlate at just 0.24, and objective policies and subjective rate at 0.33. This suggests that the Judges, on average, were unable to accurately reflect and recall the policy they used during the decision making task of making overall fairness judgments. That is, they were unable to identify which cues had been most salient to them when making an overall fairness judgment.

The two subjective measures (cue rank and cue rating) have a moderately strong correlation of 0.58 showing these two measures to elicit similar responses from Judges when reflecting upon the policy they used during the decision making task.

7.4.4 Within-individual Analysis

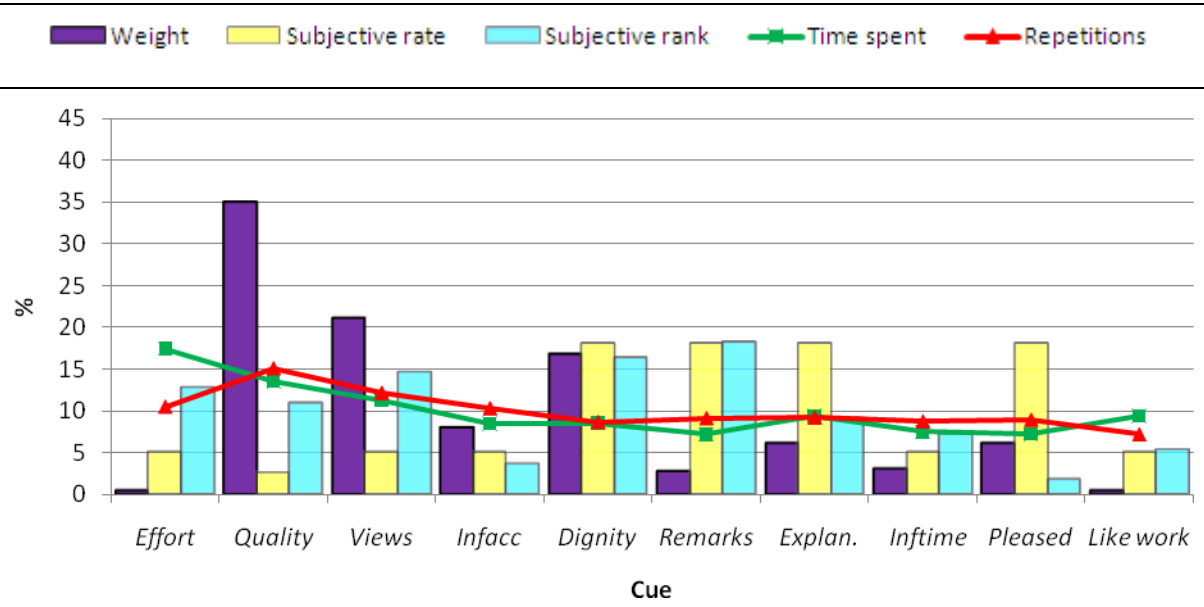
In the following pages the process used by each Judge in the process of decision making is presented graphically and described as figures 7.11 to 7.60. Consideration of each individual's policy is important as the process-tracing study showed individuals to use different policies when reaching an overall justice judgment. That is, whilst there are similarities between the Judges reliance on the available cues, there was no consensus regarding individual policies. The purple

bars show the objective relative weights assigned to each cue in terms of its contribution to the formation of an overall justice judgment. The other bars show a Judge's subjective ranking (blue bar) and rating (yellow bar) of the 10 individual cues which represents the perceived importance/contribution of each cue as a percentage. Each graph also contains information about the decision making process used by the Judge; the green line indicating time spent by the Judge on each cue (across the decision making task), and the red line the number of times each cue was revealed by the Judge (again, across the decision making task).

Judge	Weight Subjective rate Subjective rank Time spent Repetitions
CL137	

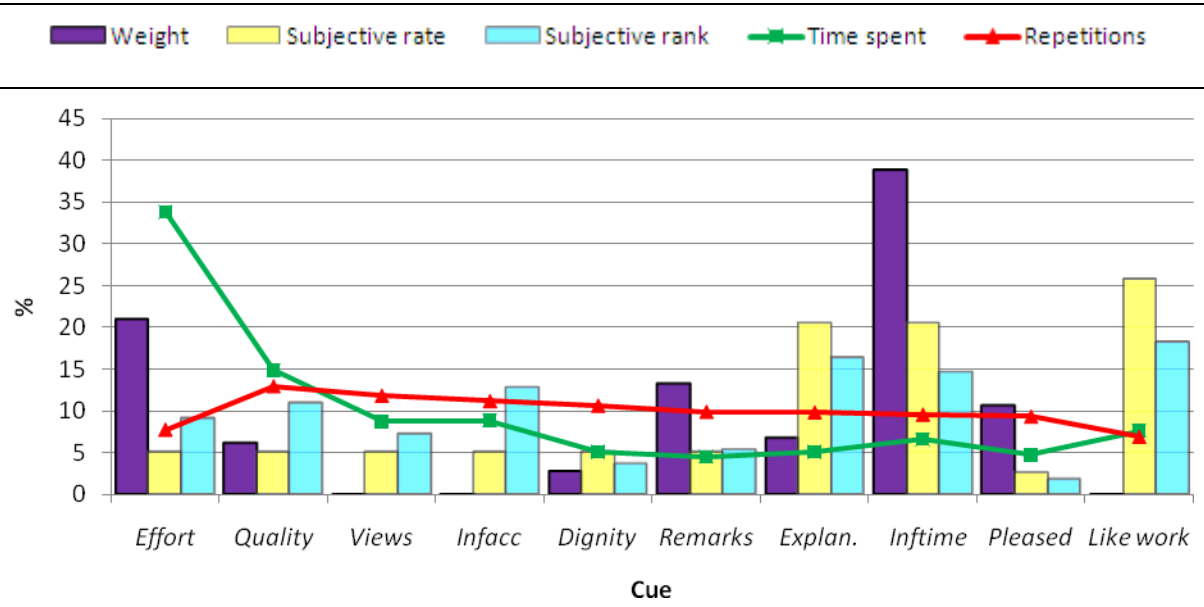
Judge CL137 had a low R^2 at 0.22, and only had one significant cue (likeworking). Overall their decision making process was heavily reliant on two cues, having information in good time and the appraisee likes working for their employer. However, their subjective policy did not show the Judge to acknowledge the importance of these two cues in their judgment making, rather it included a range of cues.

Number of repetitions, or cue acquisition was stable apart from the effort cue, and the time spent looking at individual cues may show a start-up and end effect, but with most time spent on the like working cue, which was also significant for this Judge, this cue seems particularly salient for Judge CL137. With a CRT score of 0 out of 3; Judge CL137 demonstrated a low level of cognitive control.

Judge	
DF174	

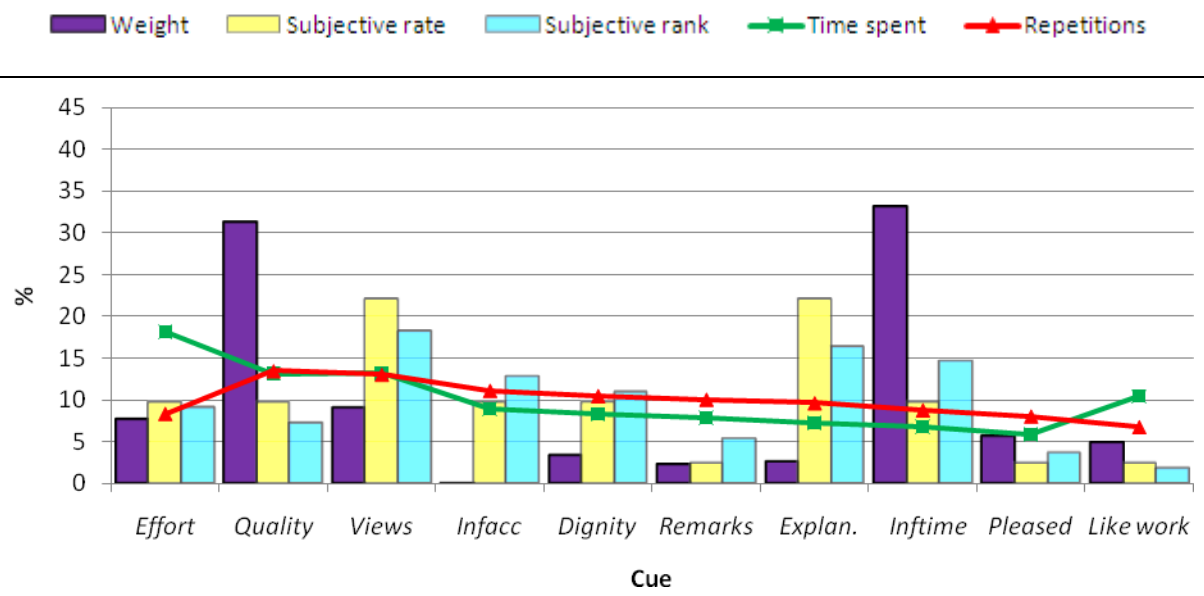
Judge DF174 had an R^2 of 0.87, with 87% of the variance in overall justice judgment being explained by the 10 cues, and had one significant cue in their objective policy – that the quality of work was reflected in the appraisal outcome. This same cue was the most important cue for this individual followed by the appraisee having the opportunity to express their views and perspective during the appraisal process. Interestingly they did not rate this cue as being particularly important to them during their subjective rating of cues, believing that the interpersonal treatment cues were those which most drove their judgments.

Here the most repetition of an individual cue was for the one which is objectively most salient (quality of work reflected in the appraisal outcome), but was fairly constant across the remaining cues. This Judge recorded a CRT score of 1 out of 3.

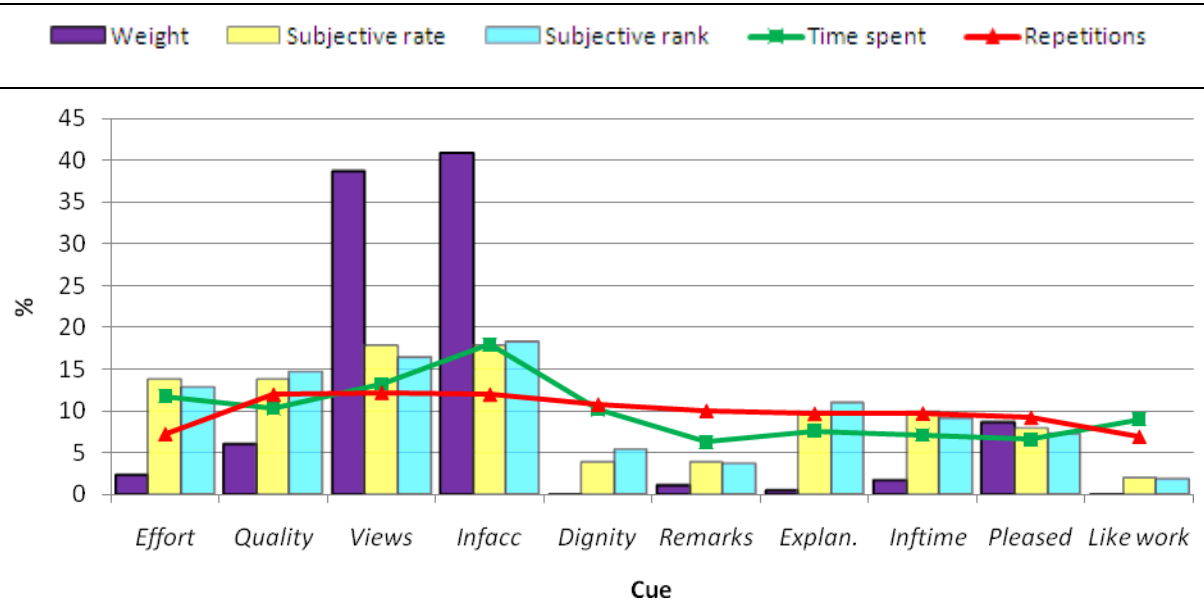
Judge	
EL12B	

Judge EL12B had an R^2 of 0.82 and their objective policy showed them to use three significant cues. The relative weights and importance of the individual cues show this Judge to weigh their overall judgment based on information available in good time, outcome reflected effort of work and those involved in the appraisal refrained from improper remarks or comments.

This Judge spent a significant amount of the total time spent on the task being exposed to the effort cue, but this was not reflected in its cue weight or the subjective importance assigned by the Judge. With a CRT score of 3 out of 3; Judge EL12B demonstrated a high level of cognitive control.

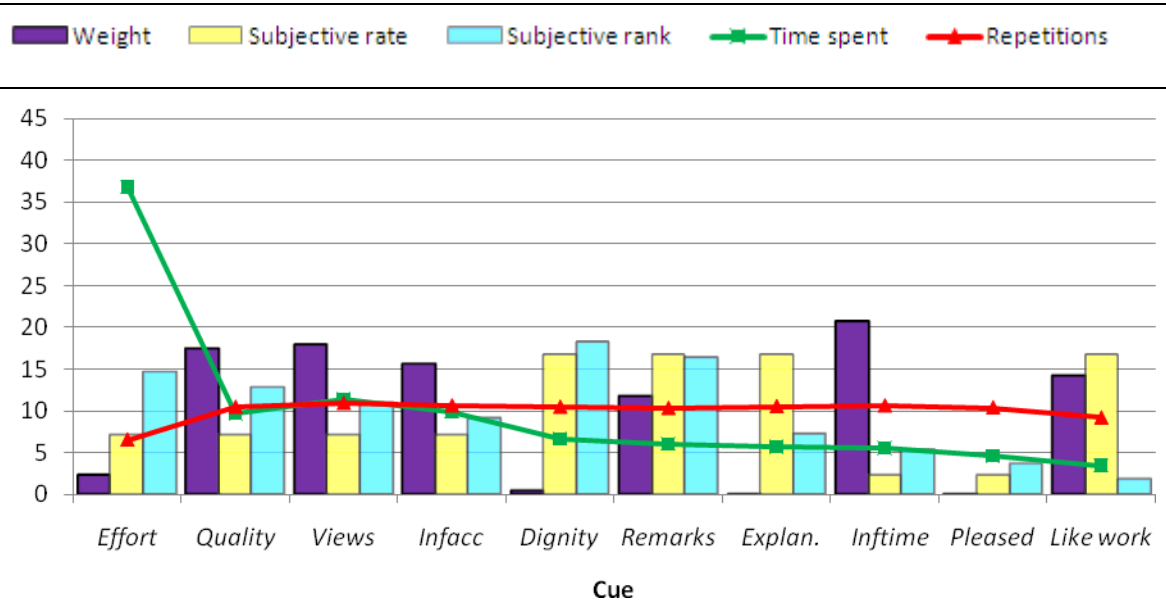
Judge	
GB14M	

This Judge had an extremely low R^2 of 0.17 and no cue was significant. This would suggest that they had a policy which was unreliant on any particular cues, however, the objective relative weightings show GB14M to assign high importance to information being available in good time and the appraisal outcome reflecting the quality of work done. This Judge scored 0 out of 3 in the administered cognitive reflection test.

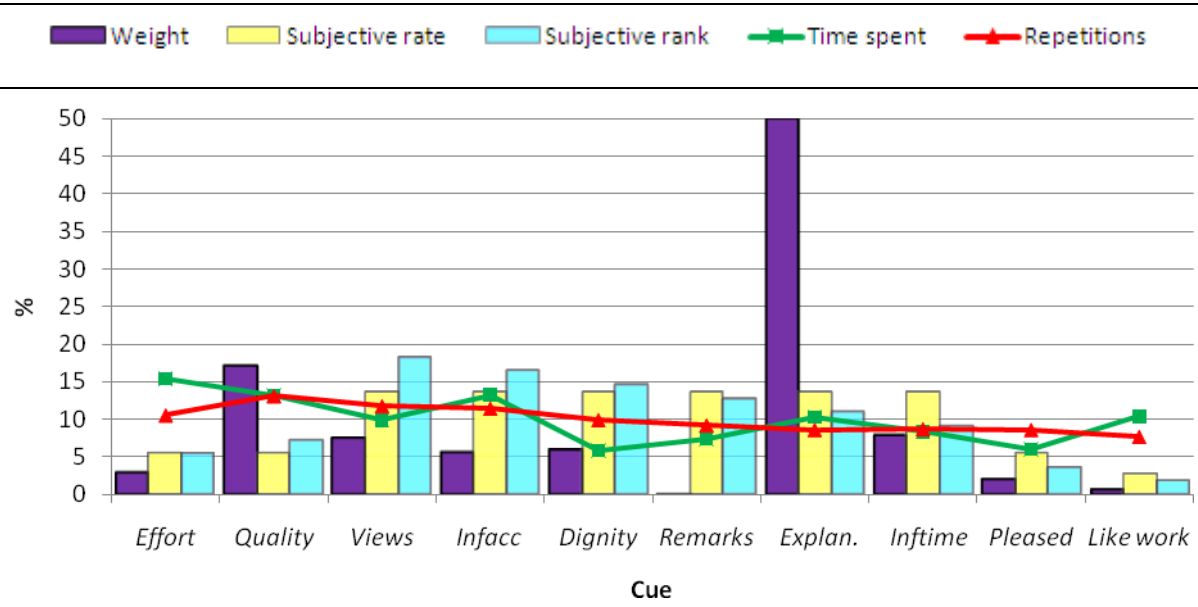
Judge	
GF15L	

Judge GF15L had a high R^2 at 0.98, yet had no significant cues; their policy was however heavily influenced by the importance of two cues. The cues representing the interpersonal justice dimension, being able to express views and perspectives during the appraisal and an appraisal based on accurate information, were strongly influential in terms of the importance assigned though their objective decision making policy.

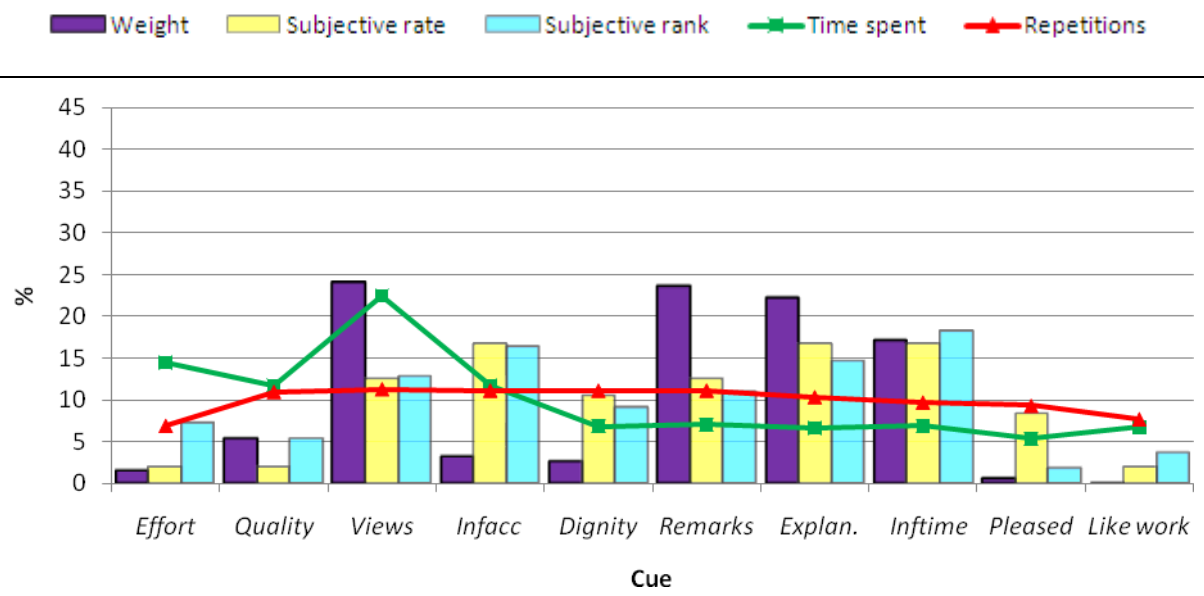
This Judge demonstrated a high level of self-insight with correlations between subjective rate and rank being strongly correlated to the objective policy they used; objective and rate r=0.81 (p=0.01), objective and rank r=0.78 (p=0.01), and rate and rank r=0.99 (p=0.01). Time spent (green line) seems to be a good fit with their objective policy with views and information accuracy having spent the most time revealed. This Judge scored 2 out of 3 on the cognitive control test.

Judge	
GF17N	

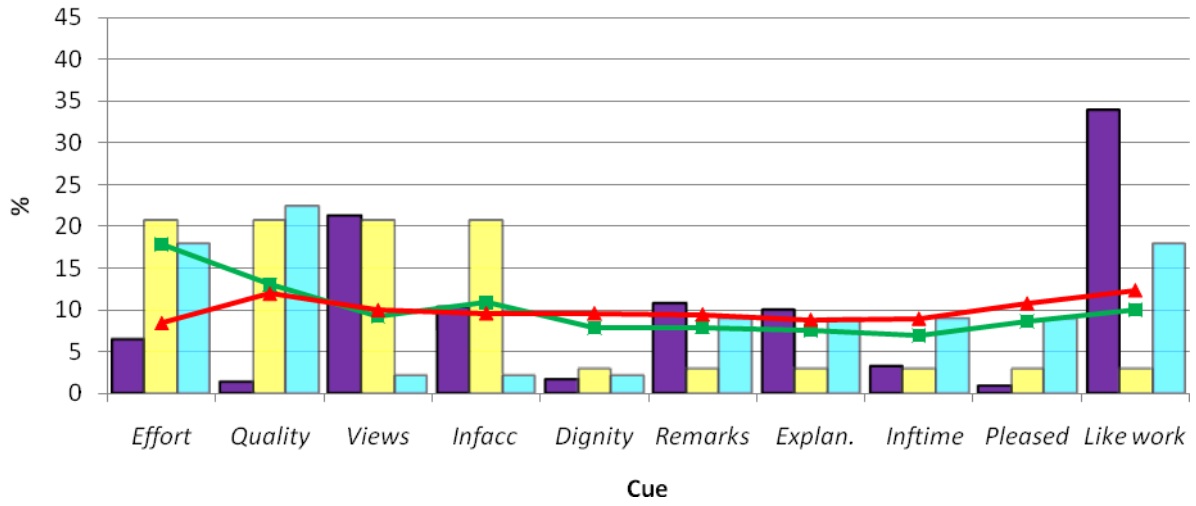
Judge GF17N had an R^2 of 0.82 and five signifcant cues. The objective relative weights show this Judge to have drawn on information from across the 10 cues rather than having one cue which is overly important to their judgment making. There is a big outlier for the time spent looking at the effort cue which is much longer than that spent looking at other cues, but this is not explained by the subsequent importance attributed to it. With a CRT score of 0 out of 3; Judge GF17N demonstrated a low level of cognitive control.

Judge	
HR13P *NB, change in scale	

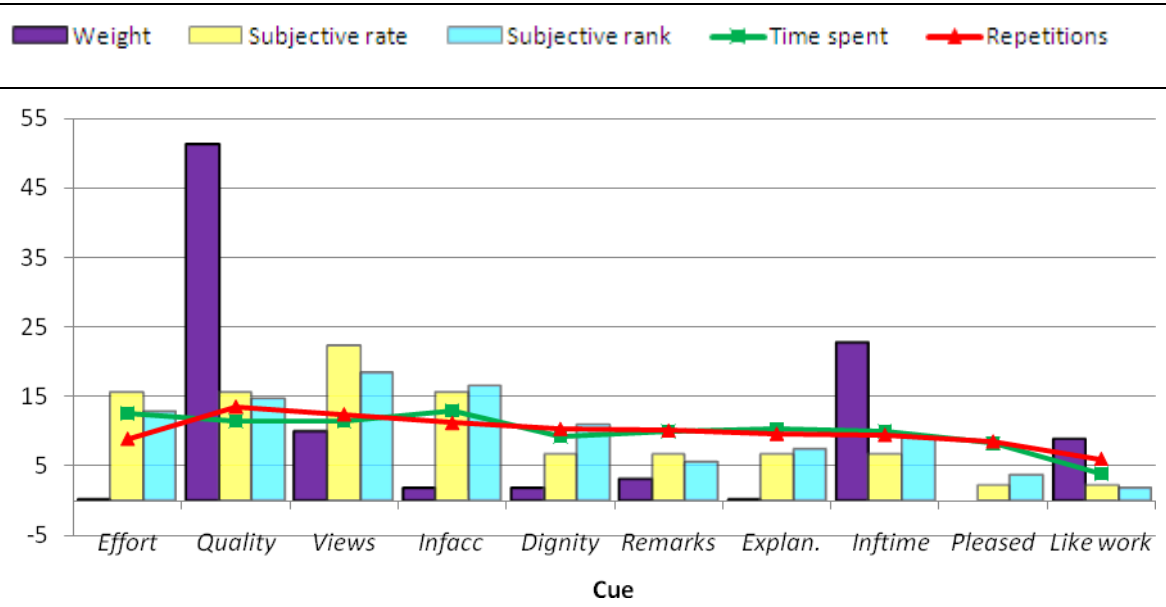
Judge HR13P had an R^2 of 0.55 and one significant cue – explanations; this was also the cue which according to its relative weight accounted for 50% of the overall justice judgment made. Subjective importance by this Judge does not reflect their clear reliance on this cue. Time spent exposed to cues and the number of cue repetitions, or acquisitions, also does not reflect the pattern of relative cue weights. Judge HR13P showed a low level of cognitive control scoring zero on the three-item cognitive reflection test.

Judge	
JR17M	

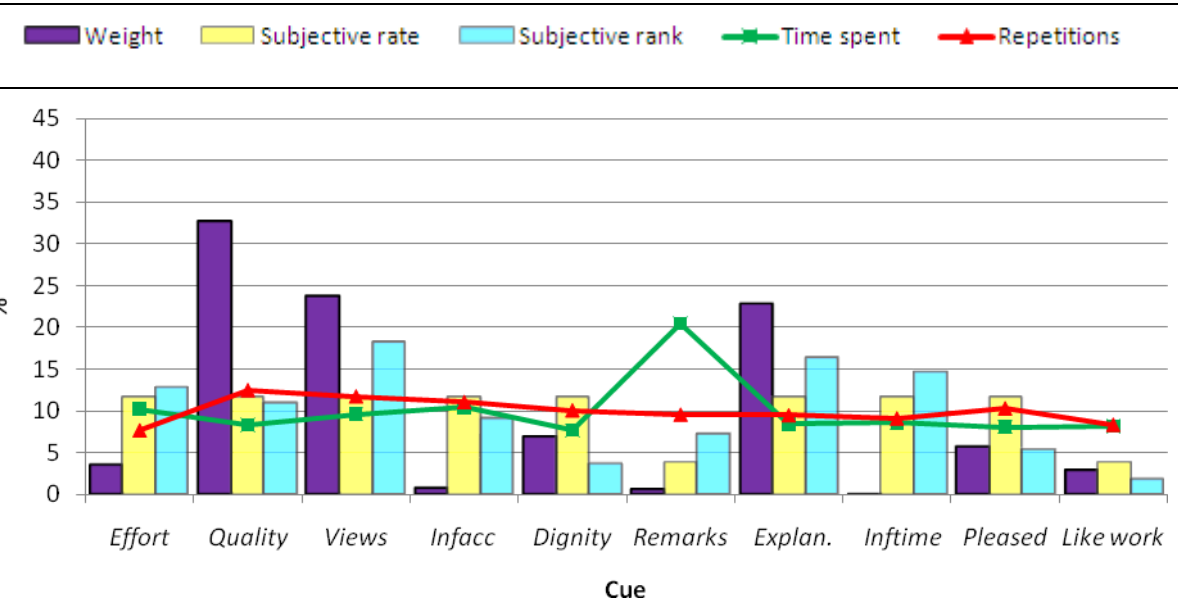
Judge JR17M had a R^2 of 0.86 and 4 significant cues which are reflected in the 4 most important (highest weighted) cues. The cue for views and perspectives being taken into account during the appraisal was assigned the most exposure by the Judge (and is the most sailent to their decision making policy) but this is not matched by the time spent on other significant cues. Number of repetitions was constant apart from the first and last cue available in the task. Judge JR17M scored 1 out of 3 on the test of cognitive control, demonstrating lower levels of cognitive control.

Judge	Weight Subjective rate Subjective rank Time spent Repetitions
K212B	

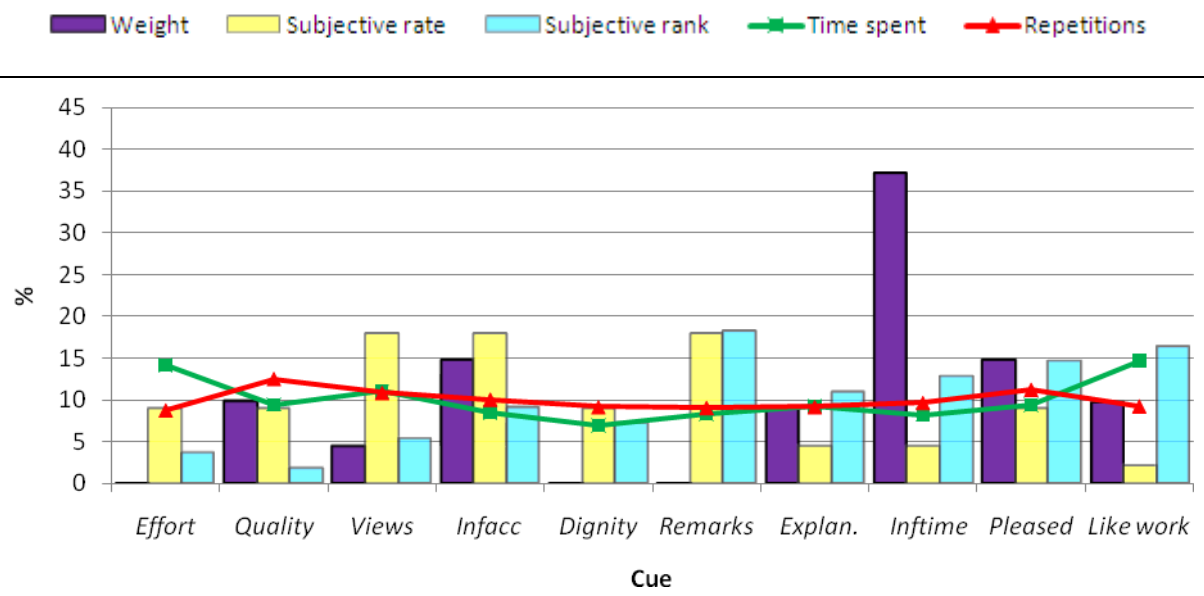
Judge K212B had an R^2 of 0.82 and one significant cue which was also the cue which was most salient to their decision making. The Judge subjectively rated the distributive and procedural justice cues as important to their judgment making but only the views cue was objectively salient. Cue exposure and acquisition was largely stable with most time being spent on the first cue; effort being reflected in the appraisal outcome. Judge K212B showed a low level of cognitive control scoring zero on the three-item cognitive reflection test.

Judge	
K31MP *NB, change in scale	

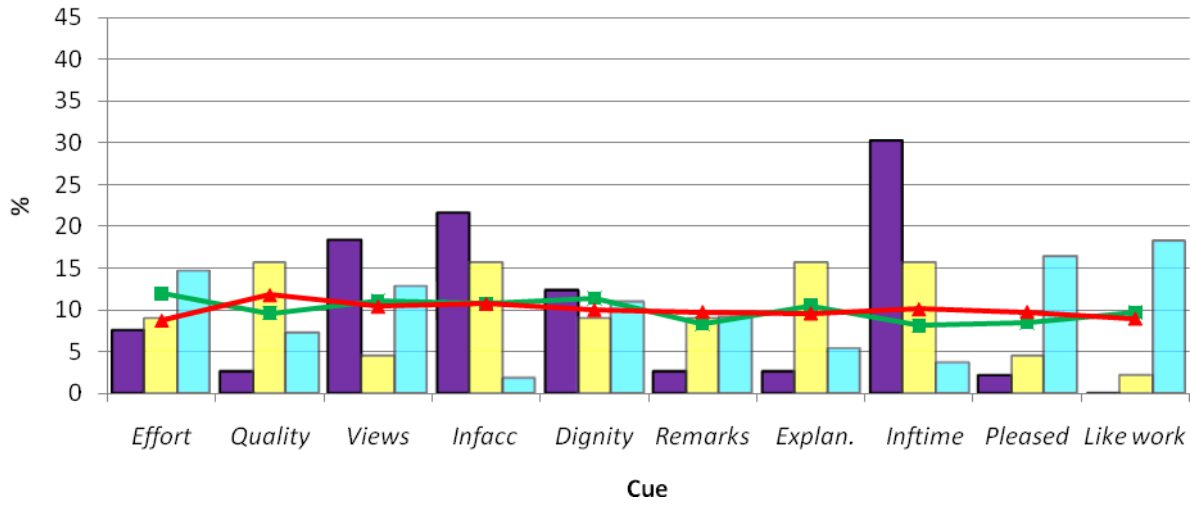
K31MP had an R^2 of 0.83 and two significant cues, which are the same as the two most important relative cue weights; quality and information in good time. These two cues were particularly salient for this Judge amounting to over 70% of their overall judgment. Judge K31MP subjectively weighted the distributive and procedural justice cues most strongly but this was not reflected in the objective cue weights. Time of exposure and cue acquisition also did not reflect the objective policy used by this Judge. This Judge scored 1 out of 3 on the cognitive reflection test.

Judge	
LP134	

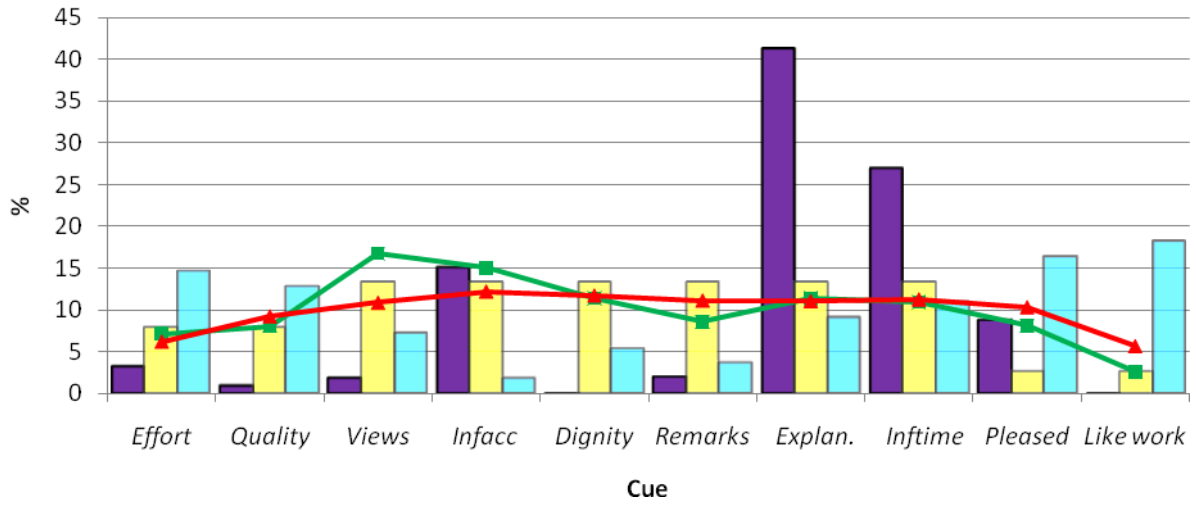
Judge LP134 had an R^2 of 0.92, meaning the 10 cues were being used to explain 92% of variance in the overall justice judgment. The four most salient cues were also significant for this Judge. Time spent exposed to the remarks cue was much higher than spent on the other cues but this is not reflected in their objective or subjective policy, with the remarks cue being of negligible importance to the overall judgment process and being neither ranked nor rated as important. With a CRT score of 3 out of 3; Judge LP134 demonstrated a high level of cognitive control.

Judge	
NL18B	

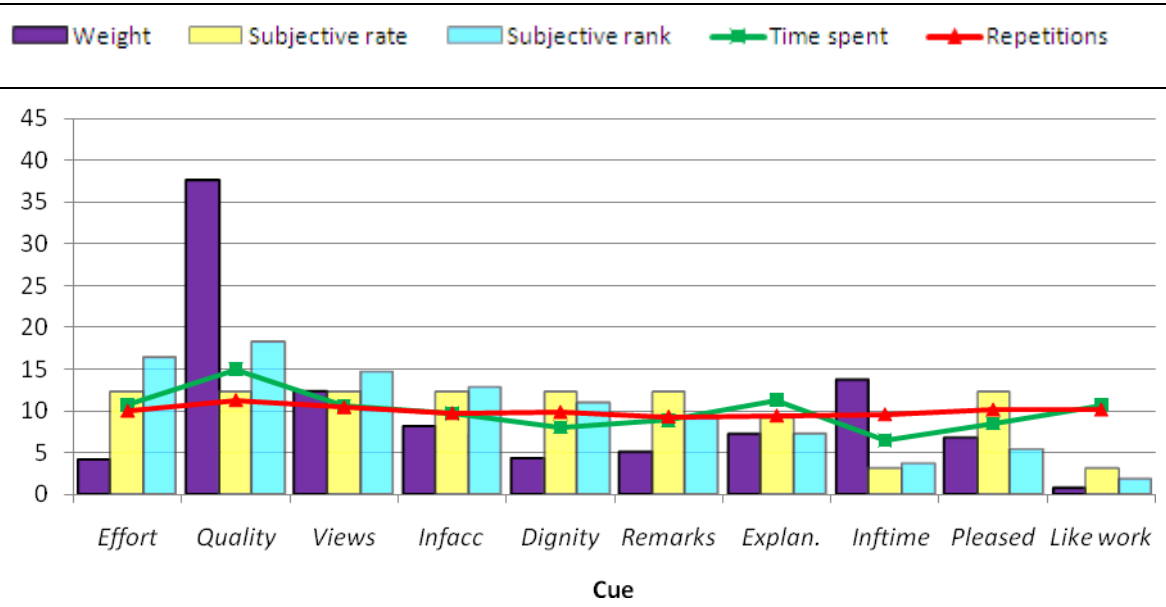
With an R^2 of 0.83 and one significant cue, information being available in good time during the appraisal process was most important to Judge NL18B's judgment contributing 37% towards variance in fairness judgments. Subjectively the Judge rated the procedural justice cues and that the appraiser refrained from improper remarks or comments as being important, but this was not reflected objectively. Judge NL18B showed a low level of cognitive control scoring zero on the three-item cognitive reflection test which was administered.

Judge	Weight Subjective rate Subjective rank Time spent Repetitions
PB173	

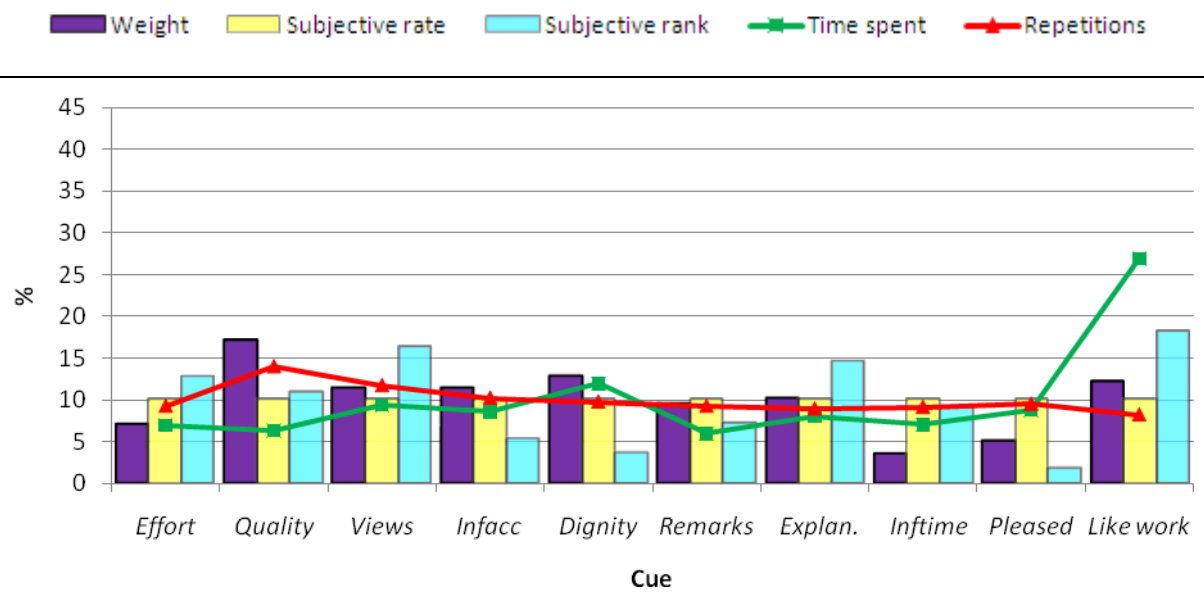
Judge PB173 had an R^2 of 0.91 and the four most salient cues in terms of weights are also significant. Judge PB173 subjectively ranked being pleased with the appraisal outcome and that the appraisee liked working for their employer as being important but this was not reflected in their actual objective policy. The Judge was consistent in terms of time exposed to cues and repetition of cues and this did not reflect their final decision making policies (be this objective or subjective). This Judge had the strongest negative correlation between their subjective rating and ranking of the cues at r=-0.922 (p=0.01), and yet this Judge scored 3 out of 3 on the cognitive reflection test, demonstrating a high level of cognitive control.

Judge	Weight Subjective rate Subjective rank Time spent Repetitions
PC126	

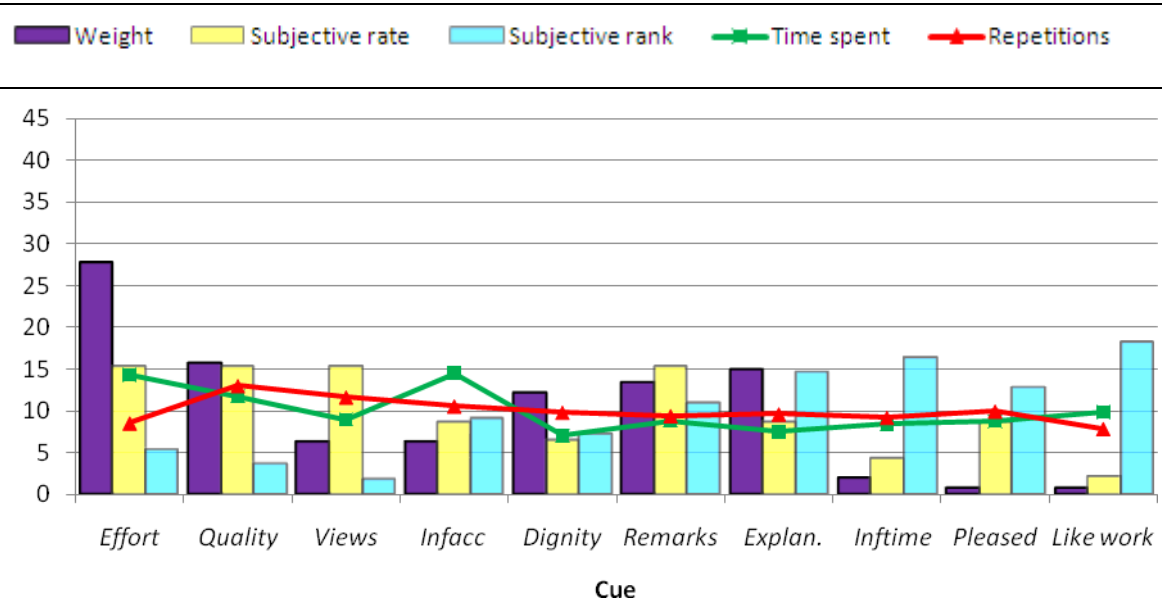
Judge PC126 had an R^2 of 0.85 and their three most salient cues were all significant. Interestingly Judge PC126 rated 6 of the cues to be equally important but this was not reflected in their objective cue weights. The least amount of time was spent exposed to the like working for employer cue which made a negligible contribution to the Judge's decision making policy. This Judge demonstrated moderate levels of cognitive control scoring 2 out of 3 in the CRT test.

Judge	
R31TV	

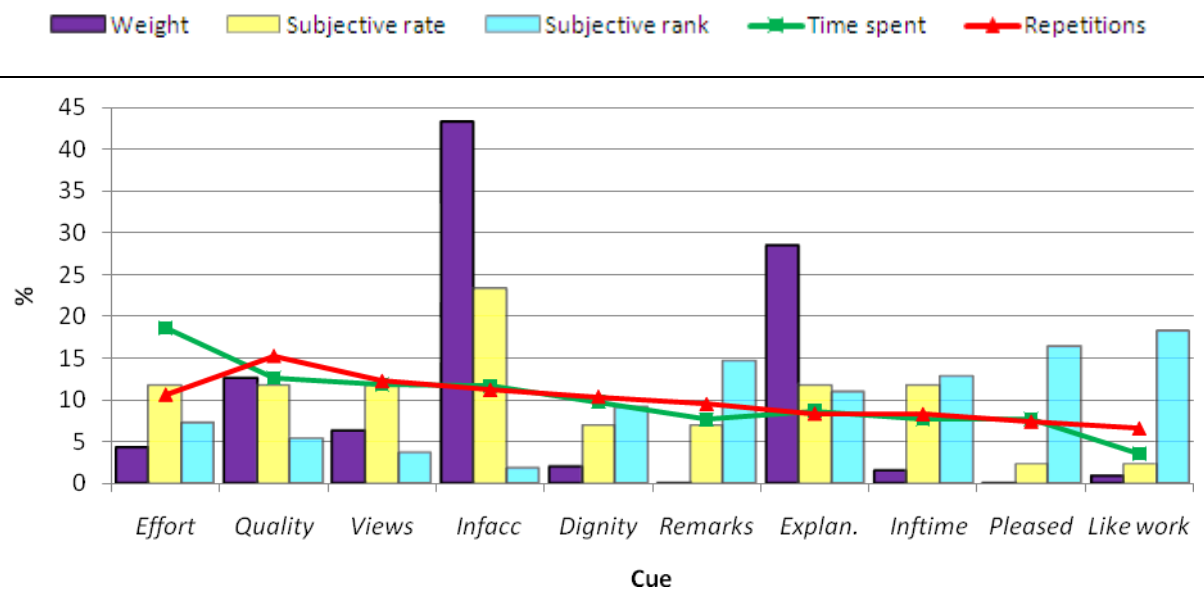
Judge R31TV had an R^2 of 0.81 and the three cues with the highest relative weights were all significant. The quality cue was particularly important to contributing to their overall justice judgment, and Judge R31TV subjectively ranked the quality cue as being most important to the formation of their justice judgments. This Judge subjectively rated 8 of the 10 cues as being important to their decision making. Judge R31TV scored 2 in the three-item CRT test, demonstrating moderate levels of cognitive control.

Judge	
R61YV	

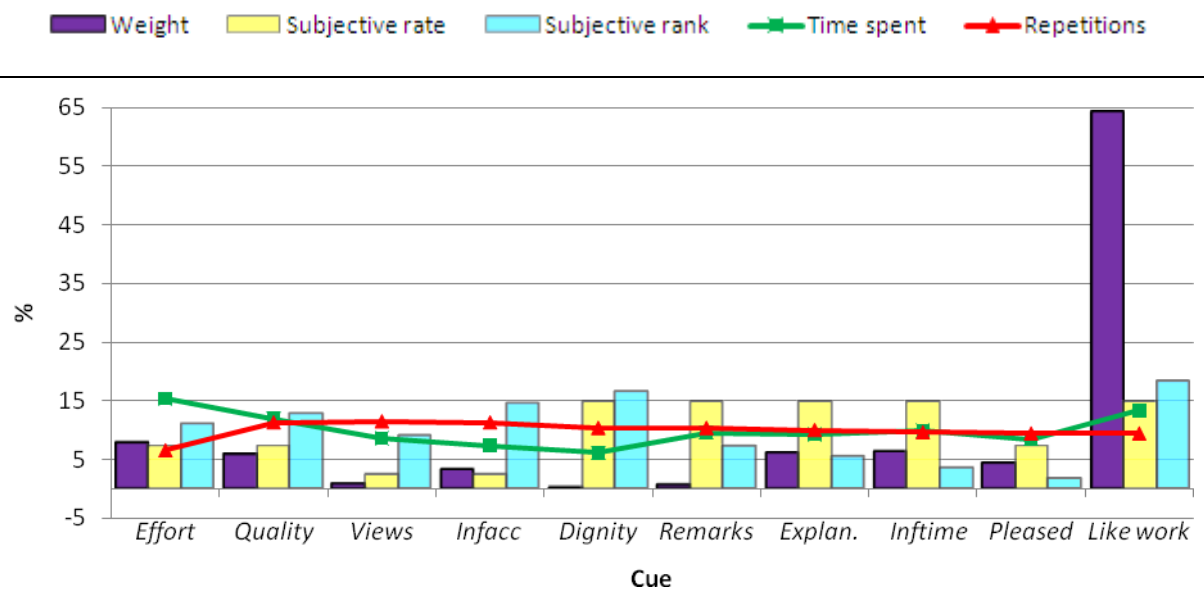
R61YV had an R^2 of 0.86 and no significant cues. The Judge's objective policy drew on the range of cues available and this was also reflected in their Judge's subjective ranking and rating of the cues. The most time was spent by the Judge exposed to the like work cue but this was not reflected in its objective weight and importance. Judge R61YV scored 2 out of 3 on the CRT test, demonstrating moderate levels of cognitive control.

Judge	
SA1T3	

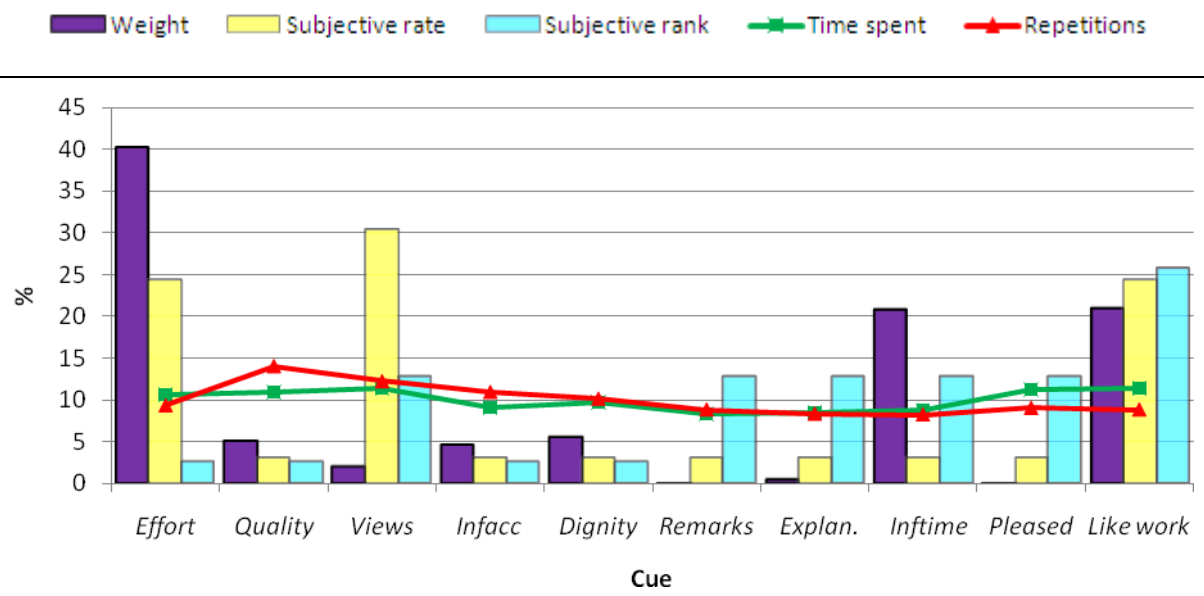
Judge SA1T3 had an R^2 of 0.72, with the 10 cues able to explain around 72% of variance in overall judgment. The effort cue was most salient for this Judge in reaching an overall justice judgment, and was statistically significant. The objective policy for this Judge was driven by the distributive justice cues but those cues relating to interpersonal treatment were also important. The subjective ranking of cues (blue bar) showed the cues to ascend in importance through the list, yet this was not reflected objectively and thus the Judge may have ranked the cues purely in the order in which they appeared in the ranking question being unaware of any policy they did use. With a CRT score of 0 out of 3; Judge SA1T3 demonstrated a low level of cognitive control.

Judge	
SK172	

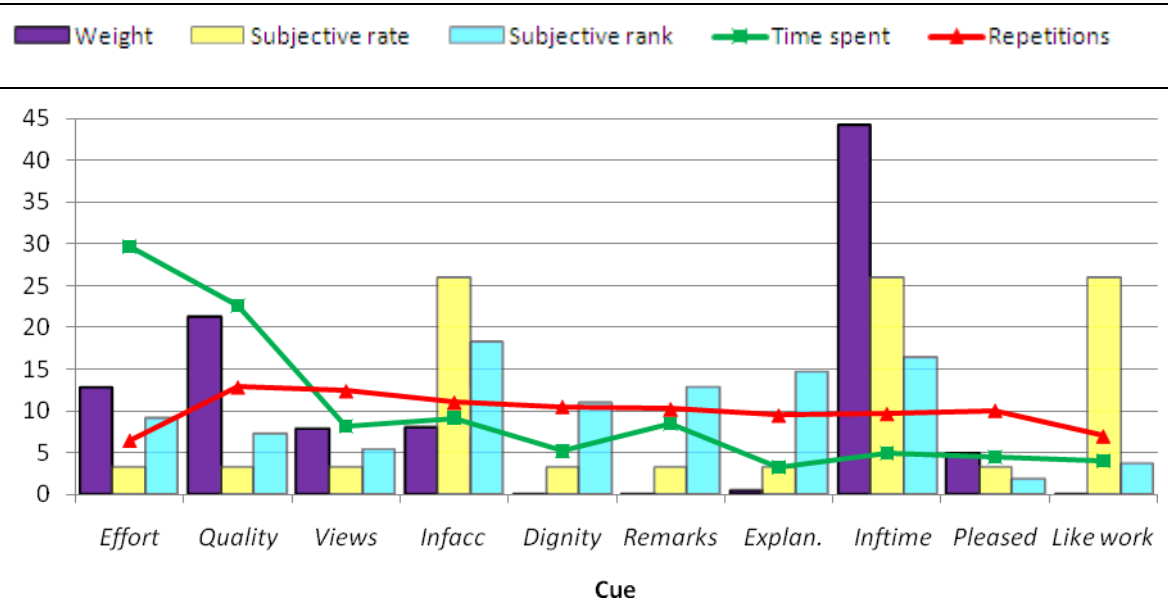
Judge SK172 had an R^2 of 0.72. The information accuracy cue was significant and the most salient cue to this Judge in reaching an overall judgment. The explanations cue was also important but not significant. Judge SK172 had correctly rated (but did not rank) the information accuracy cue as being most important to their overall judgment. Judge SK172 scored 1 out of 3 in the cognitive reflection test, suggesting lower levels of cognitive control.

Judge	
TG17B *NB, change in scale	

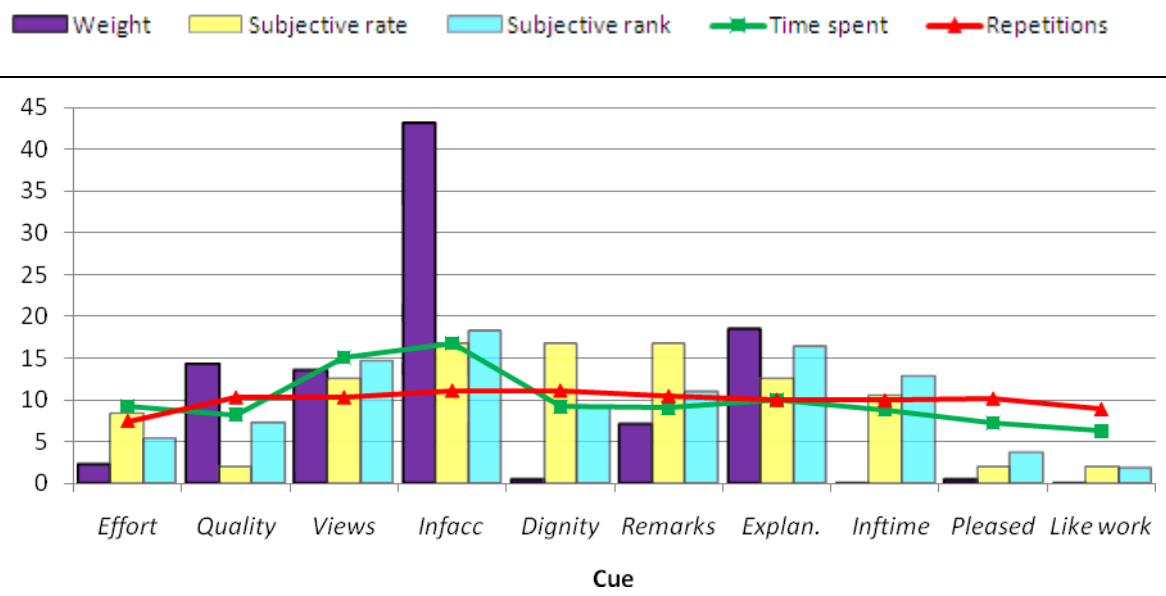
This Judge had an R^2 of 0.75. Judge TG17B had one significant cue which was the most important cue in the objective cue weighting; like working. This single cue was very strongly weighted and relative to the other cues accounted for 64% of variance in overall judgment. Subjectively the likework cue was also the most important. The time spent and frequency of cue acquisition does not reflect the overriding importance of this one cue. Judge TG17B scored 2 out of 3 on the CRT test, demonstrating moderate levels of cognitive control.

Judge	
TP1M8	

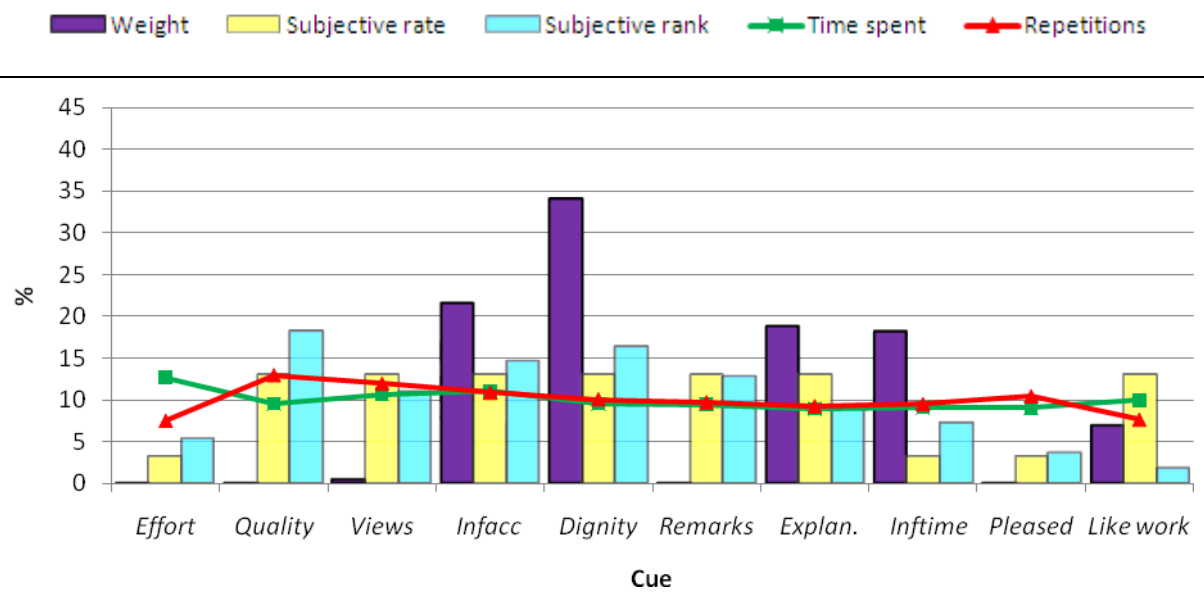
Judge TP1M8 has an R^2 of 0.70 and the cue with the strongest weight; effort, was also significant. This Judge's policy was heavily reliant on three cues with the others making a negligible contribution. Time spent and cue repetition does not accurately reflect the variation between those cues which were objectively most important and least important. With a CRT score of 0 out of 3; Judge TP1M8 demonstrated a low level of cognitive control.

Judge	
W31ST	

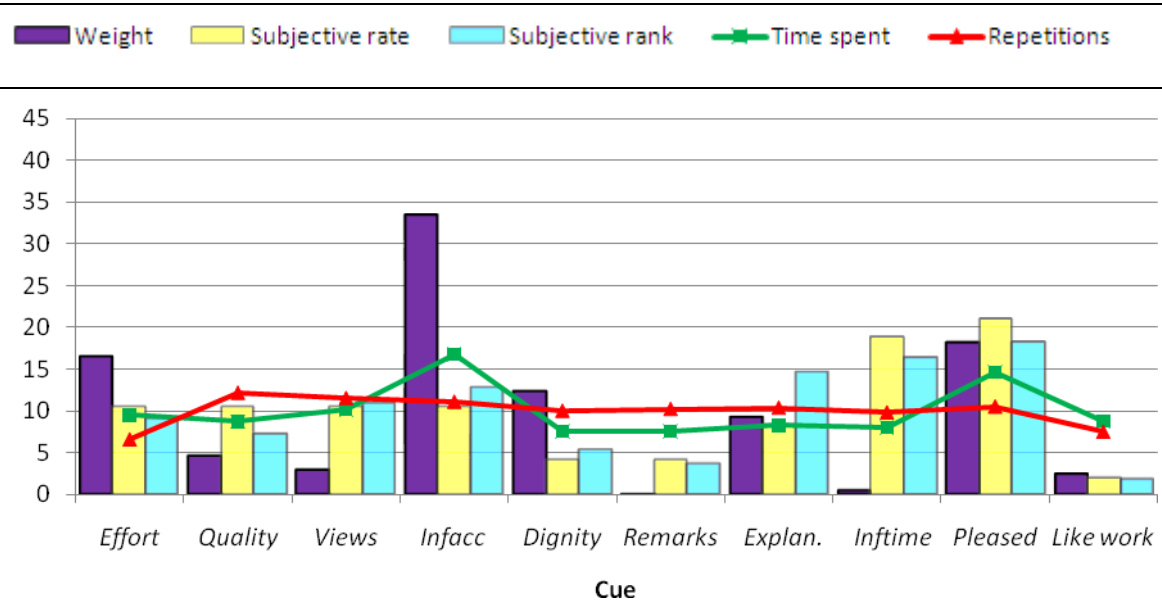
Judge W31ST had an R^2 of 0.84 and three significantly important cues. For this Judge the cues representing the interpersonal justice dimension contributed little to an overall judgment. Most time was spent by this Judge exposed to the distributive justice cues and objectively these played some part in the formation of an overall judgment. This Judge scored 1 out of 3 in the CRT test, suggesting a low level of cognitive control.

Judge	
WE14S	

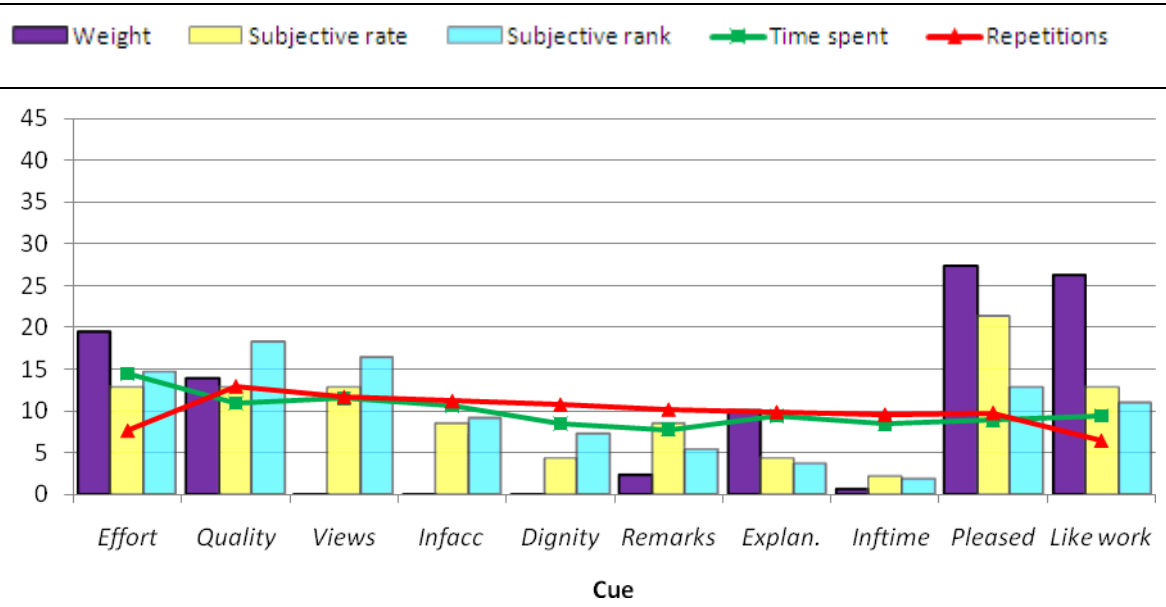
Judge WE14S had an R^2 of 0.75, with the four significant cues being weighted most important. This Judge did not objectively or subjectively weigh either of the non-justice cues in reaching their overall judgment of appraisal fairness. The most exposure was to the information accuracy cue but the time spent exposed to the other cues did not reflect their relative importance. Judge WE14S scored 3 out of 3 on the CRT test, demonstrating a high level of cognitive control.

Judge	
WH14F	

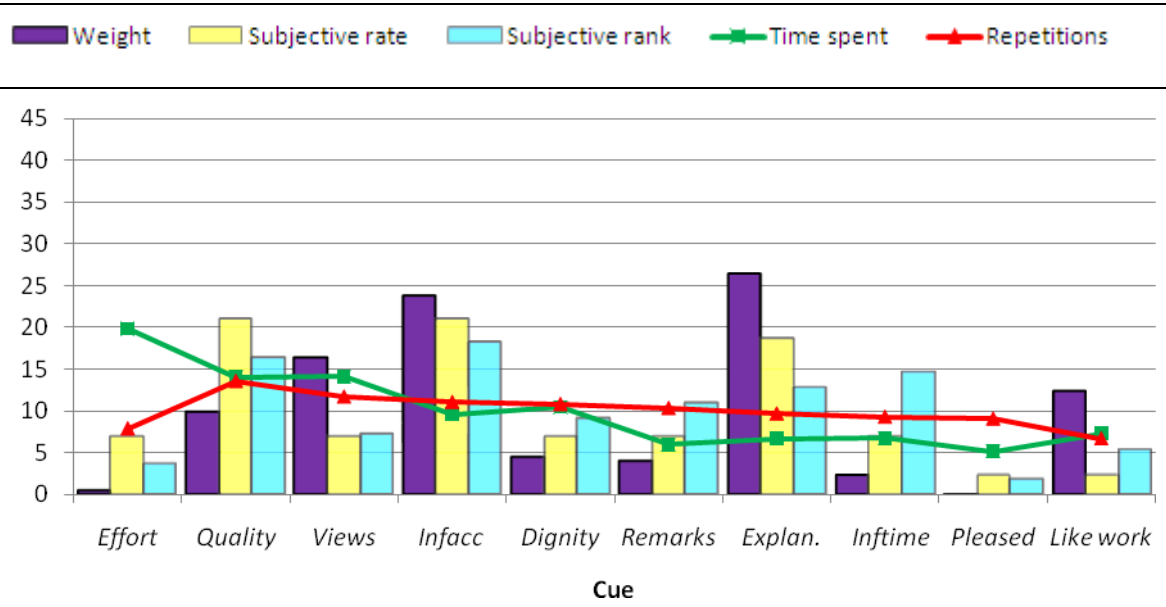
The R^2 for Judge WH14F was 0.77 and the dignity cue was statistically significant. This Judge's objective policy was primarily based on four cues, and a fifth (like working for employer) offered some contribution to the judgment, however the other 5 cues made negligible contributions. There was little variation in either time spent revealing cues or the level of cue acquisition for this Judge. This Judge scored 2 out of 3 in the CRT test, demonstrating a moderate level of cognitive control.

Judge	
XE1F3	

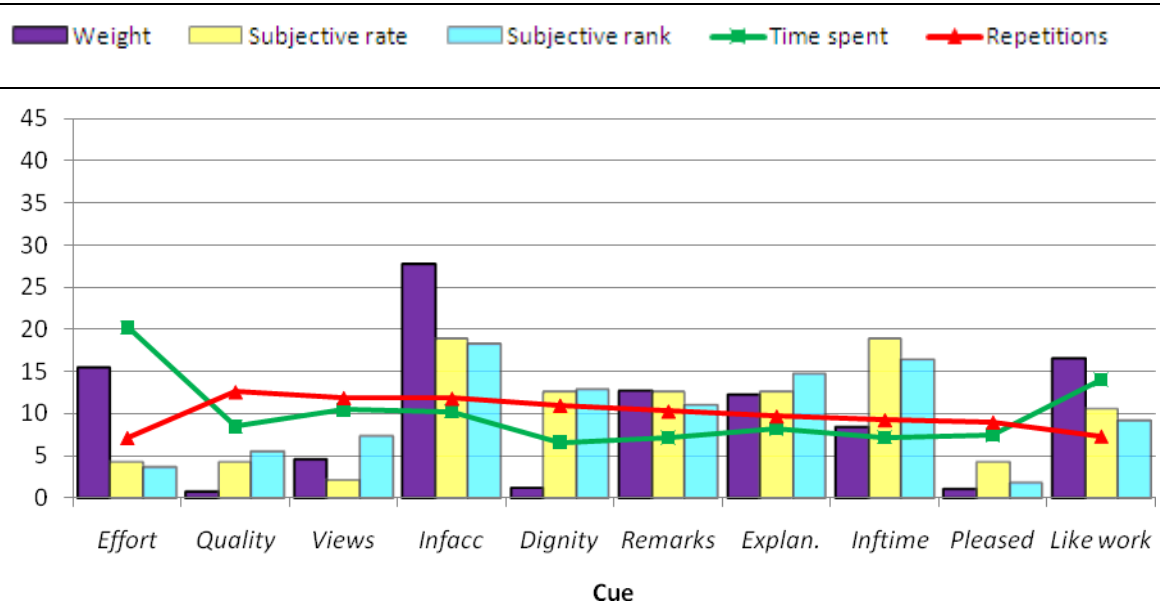
Judge XE1F3 had an R^2 of 0.86 and the two most important cues (highest weighting) were significant. The objective decision making policy of this judge was heavily influenced by the information on which the appraisal was based being accurate, but little consideration was given (objectively or subjectively) to whether the individual being appraised liked working for their employer. This Judge spent most time looking at the two most highly weighted cues but worked consistently through the task not making frequent reacquistions of information before making their judgments. Judge XE1F3 scored 3 out of 3 on the CRT test, demonstrating a high level of cognitive control.

Judge	
YB174	

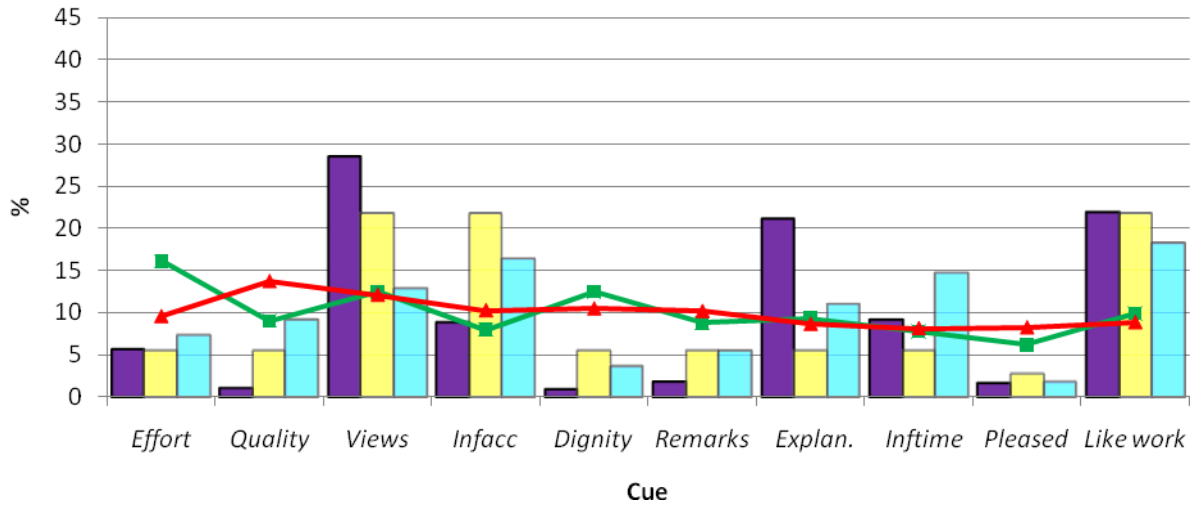
Judge YB174 had an R^2 of 0.87 and 4 significant cues, which were those most heavily weighted in terms of their importance in contributing to the overall justice judgment. Those cues relating to the distributive justice dimension and the additional measures of outcome favorability and satisfaction were most important to this Judge in their decision making policy. This Judge demonstrated a high level of cognitive control, scoring 3 out of 3 on the CRT test.

Judge	
YK1R3	

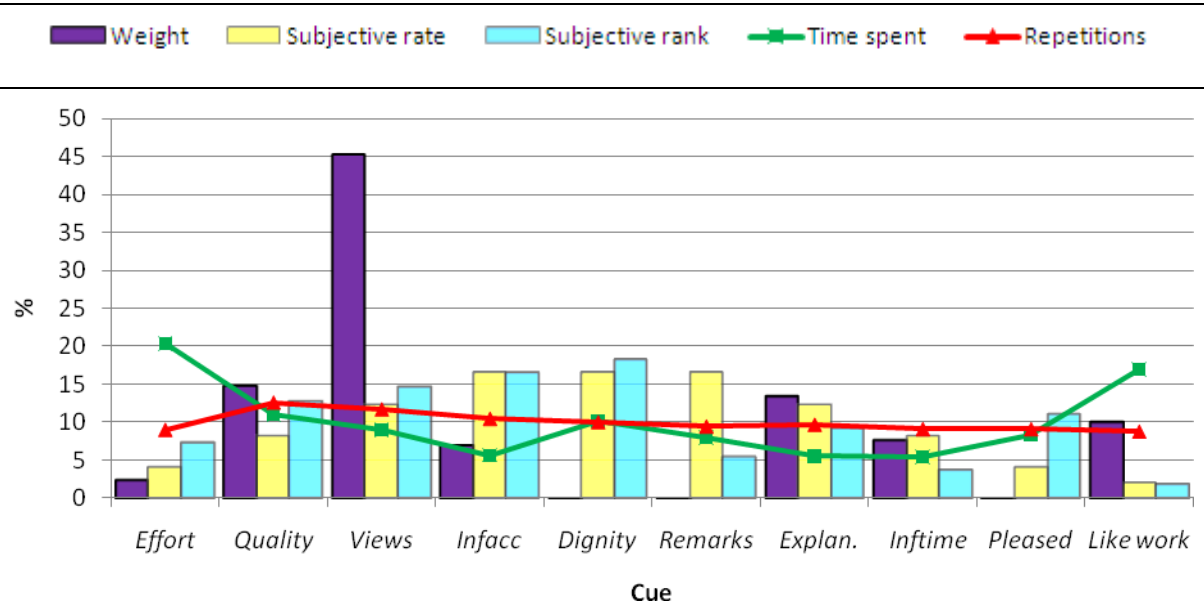
Judge YK1R3 has an R^2 of 0.90 and five significant cues which influenced the decision making process. This Judge's subjective rating of the importance of individual cues is consistent with the objective weights for the most important cues. The time Judge YK1R3 exposed the individual cues for did not reflect their objective devision making policy. Judge YK1R3 correctly answered 1 out of 3 in the cognitive reflection test, suggesting lower levels of cognitive control.

Judge	
YP13R	

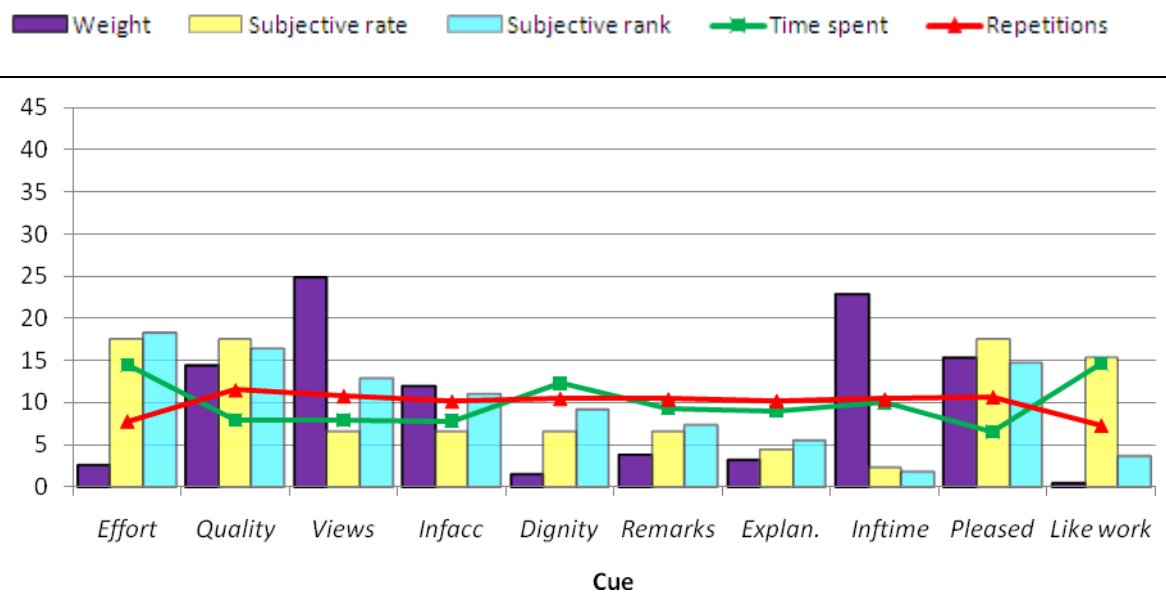
Judge YP13R had an R^2 of 0.85 and five significant cues. The Judge subjectively ranked and rated the information accuracy cue to be important to their decision making process, however they also ranked and rated the information available in good time cue (which was objectively 6th in importance). This Judge showed moderate levels of cognitive control, scoring 2 in the three-item CRT test.

Judge	Weight Subjective rate Subjective rank Time spent Repetitions
B327C	

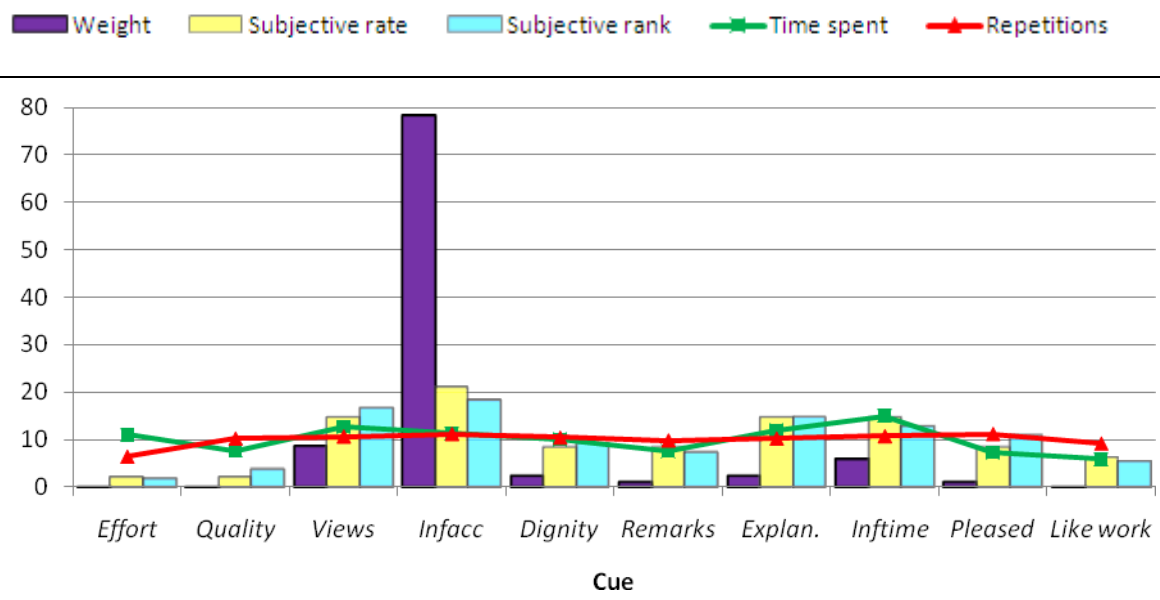
Judge B327C had an R^2 of 0.63 and their three most important cues were all significant. In this subjective rating of the 10 cues this Judge assigned high importance to two of the three salient cues and believed the remaining 7 cues to make minimal contribution to their judgment. Neither time spent revealing individual cues nor repetition of cues reflects the final importance attributed to them. With a CRT score of 0 out of 3; Judge B327C demonstrated a low level of cognitive control.

Judge	
BB24M *NB, change in scale	

Judge BB24M had an objective policy driven largely by the appraisee having the opportunity to express their views and perspectives during the appraisal, and an R^2 of 0.88. The 10 cues were able to explain 88% of the variance in overall judgment and in terms of relative importance 45% of that judgment was lead by the views cue. Objectively this Judge found the interpersonal cues negligible, however they believed that each cue had a subjective value to their decision making policy. Time spent on individual cues was variable but does not follow assigned importance, whilst cue aquistion through repetition was relatively constant. Judge BB24M showed a low level of cognitive control scoring zero on the three-item cognitive reflection test.

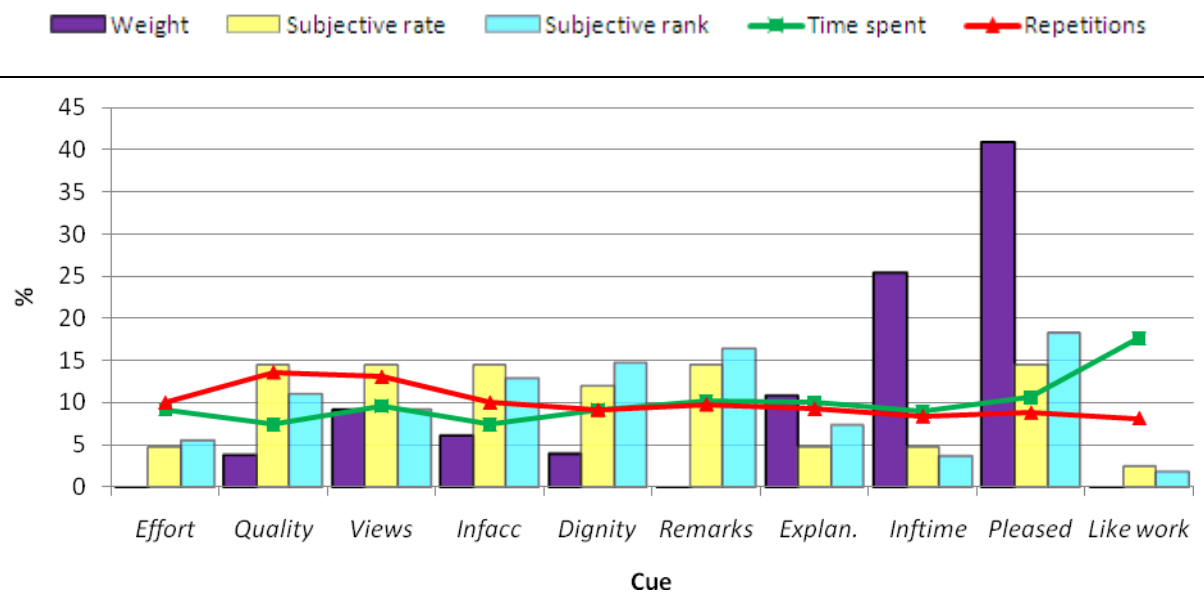
Judge	
BC24R	

Judge BC24R had an R^2 of 0.75 and no significant cues. However their objective policy assigned the highest relative weights to views and perspectives being taken into account during the appraisal and that information was received in good time, which combined to explain almost 50% of the overall judgment. For this Judge whether the appraisee liked working for their employer had little objective influence on their overall fairness judgment. Interpersonal justice cues did not made an important contribution to overall judgments objectively or subjectively. Judge BC24R scored 3 in the three-item CRT test, demonstrating a high level of cognitive control.

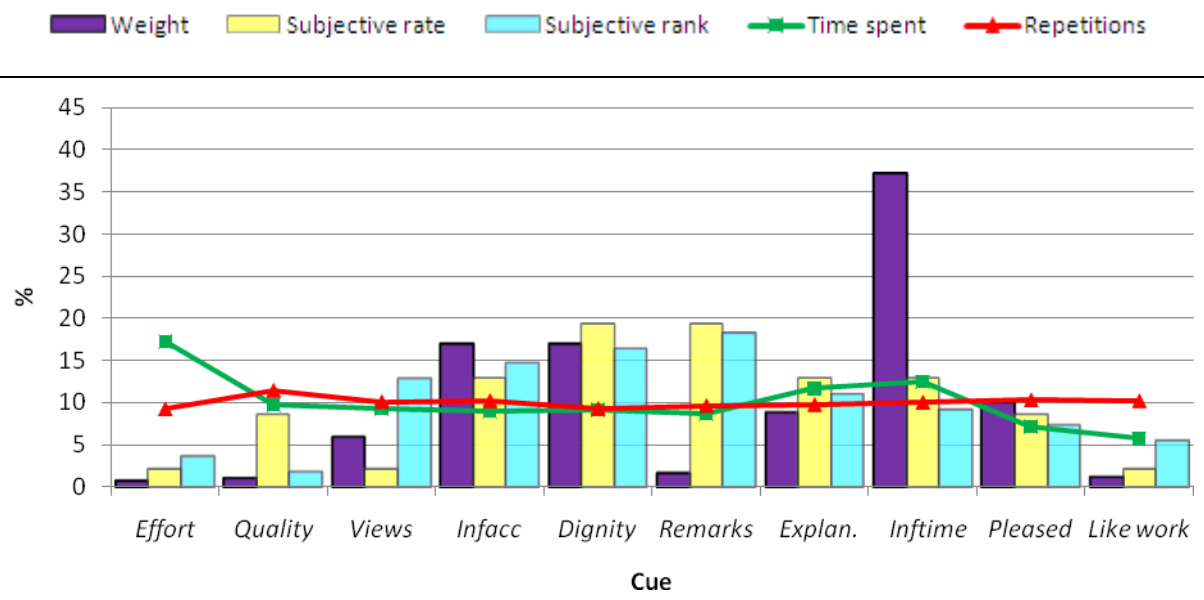
Judge	
DA24K *NB, change in scale	

For Judge DA24K there was one cue which drove the judgment process; that the appraisal was based on accurate information. This cue was most important objectively, and when subjectively ranked and rated by the Judge. This one cue was statistically significant and the Judge had an R^2 of 0.85. Time spent revealing the cues did not reflect the enormous contribution made by the information accuracy cue to their overall justice judgment.

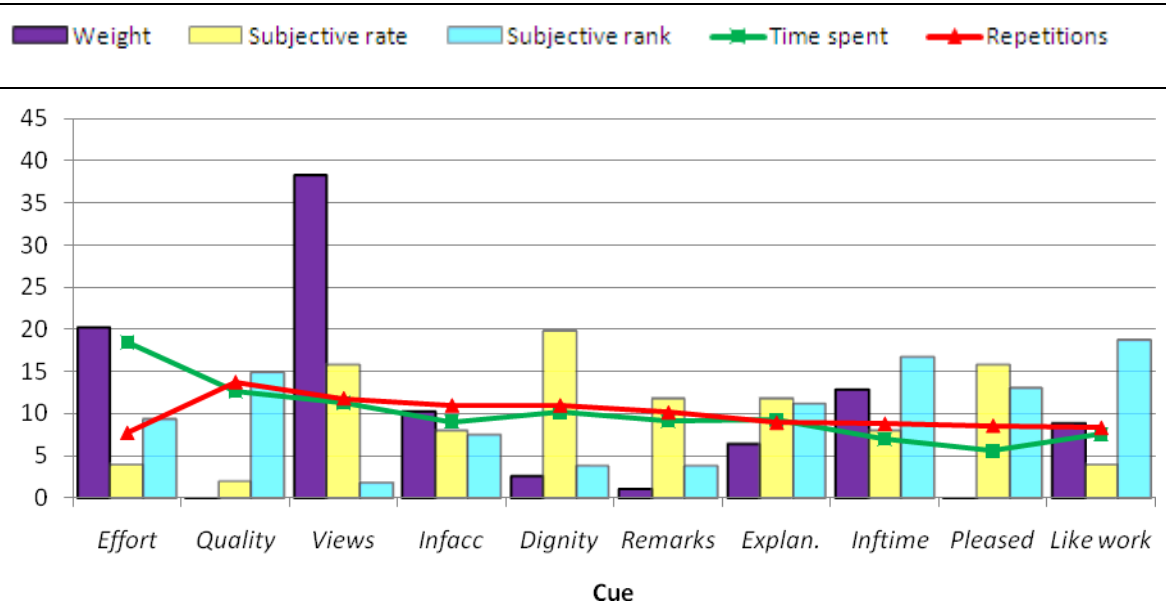
This Judge demonstrated a high level of self-insight with correlations between subjective rate and rank being strongly correlated to the objective policy they used; objective and rate r=0.97 (p=0.01), objective and rank r=0.98 (p=0.01), and rate and rank r=0.97 (p=0.01). However, this Judge scored zero on the CRT test, suggesting a low level of cognitive control.

Judge	
ER249	

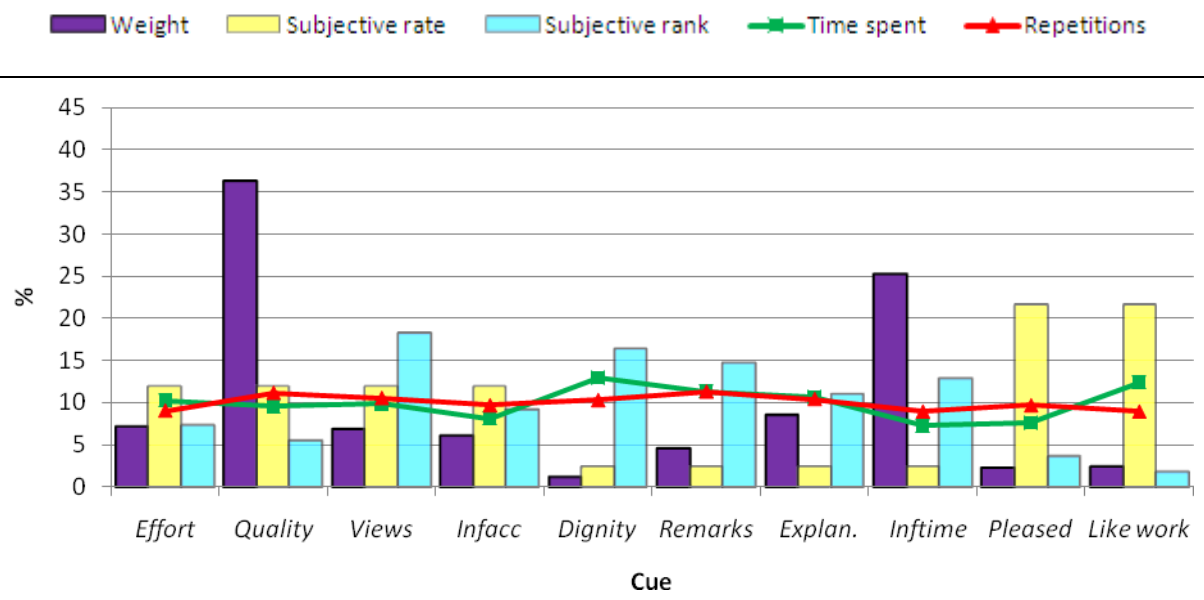
This Judge had an R^2 of 0.90 and their objective policy was driven by two cues; information available in good time and being pleased with the appraisal outcome. Whilst the Judge subjectively rated and ranked the pleased cue as making an important contribution to their judgment, they did not do so for the information in good time cue. Number of repetitions for each cue would predict that the appraisal outcome reflecting the quality of work and the two procedurally just cues would be most salient for the Judge, but this was not the case. Judge ER249 scored 2 out of 3 on the CRT test, demonstrating moderate levels of cognitive control.

Judge	
ES26C	

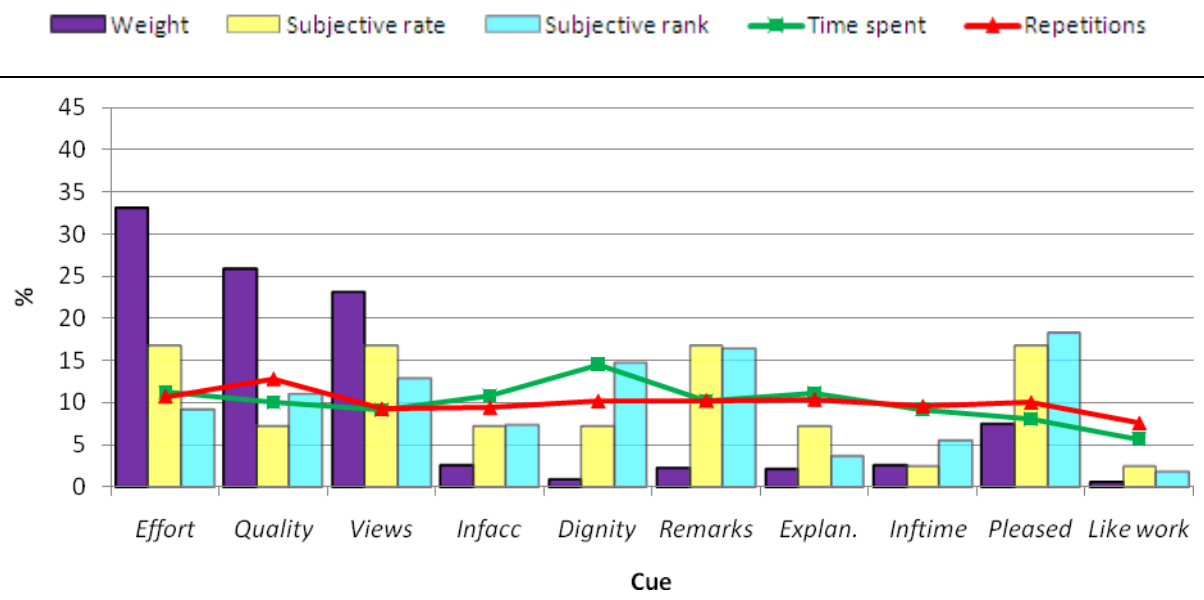
Judge ES26C had an R^2 of 0.80 and three significant cues. Objective relative importance of cues showed information being available in good time to contribute most to an overall judgment. This Judge subjectively ranked and rated the two interpersonal justice cues as most important to their decision making but whilst dignity was objectively salient, the appraiser refraining from improper remarks or comments during the appraisal process made little contribution to their judgment. Judge ES26C assigned little objective or subjective importance to the distributively just cues or the appraisal outcome reflecting the effort and quality put into work. This Judge demonstrated a low level of cognitive control, scoring zero on the three-item CRT test.

Judge	
FV269	

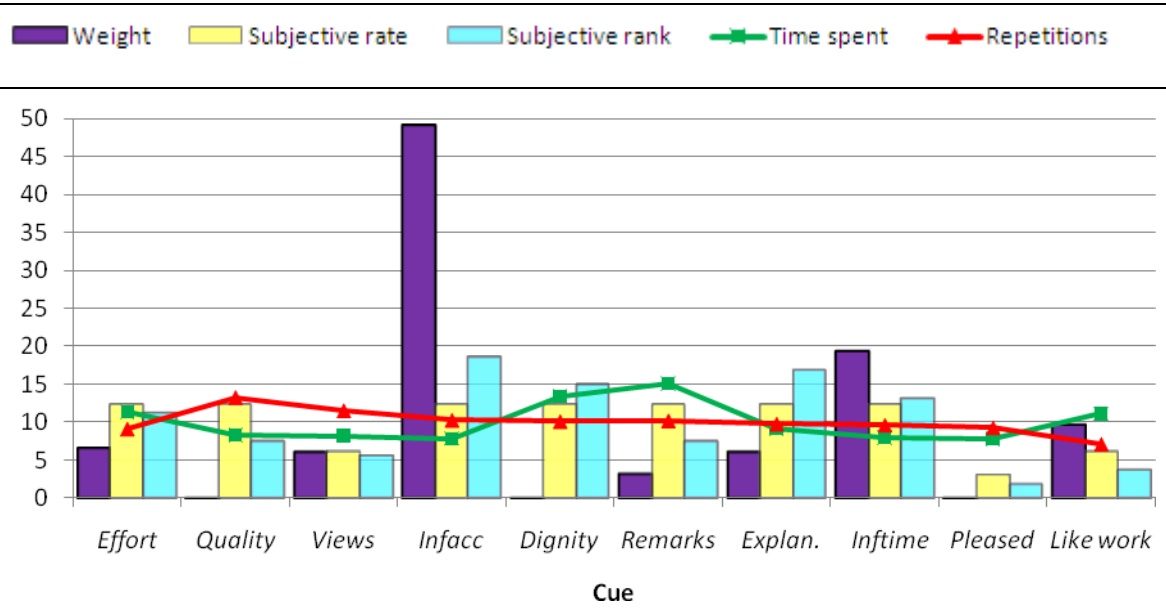
Judge FV269 had an R^2 of 0.86 and one significant cue, but objective relative weighting of the 10 cues also showed effort reflected in the appraisal outcome to be a salient cue for this Judge. Subjectively, this Judge felt that the appraisee being treated with dignity and respect (rated) and that the appraisee liked working for their employer (ranked) were most important to their overall fairness judgment but this was not the case. Cue time and repetition shows no relationship to this Judge's policy. With a CRT score of 0 out of 3; Judge FV269 demonstrated a low level of cognitive control.

Judge	
KM23R	

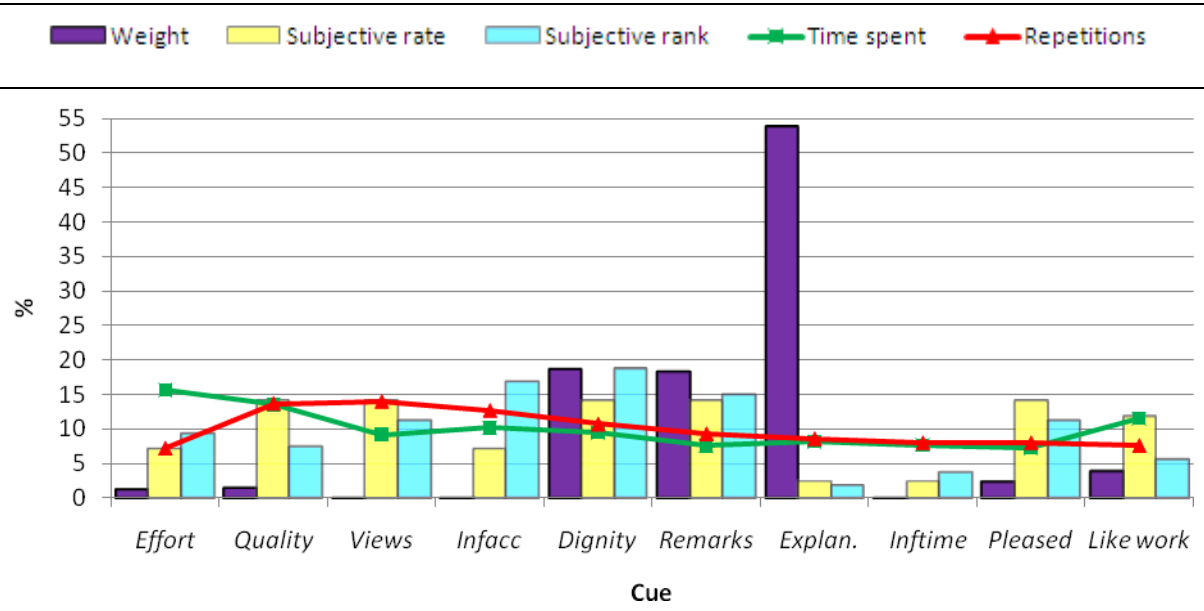
Judge KM23R had an R^2 of 0.68 and two significant cues. This Judge subjectively rated the two non-justice items as most important for their decision, suggesting that they believed they were making a decision which reflected outcome satisfaction and the relationship the anonymous colleague had with their employer, but objectively this was not the case. Judge KM23R scored 0 out of 3 on the CRT test, demonstrating a low level of cognitive control.

Judge	
LE26C	

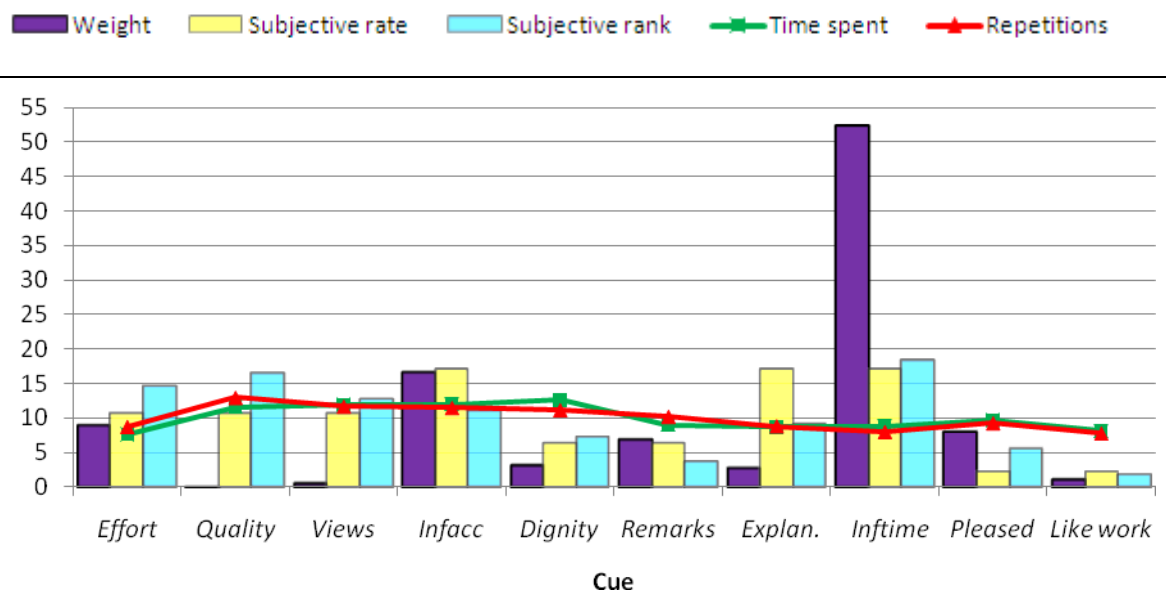
Judge LE26C had an R^2 of 0.91 and three significant cues. For this Judge, the objective relative weights for the 10 cues show the distributive cues and that the appraisee had their views and perspectives taken into account contribute 82% of variance in overall judgment. This is not an order effect as Judge LE26C was administered the task in version 2, in which the cue list started with the interpersonal and informational justice cues. Judge LE26C showed a low level of cognitive control scoring zero on the three-item cognitive reflection test.

Judge	
LK273 *NB, change in scale	

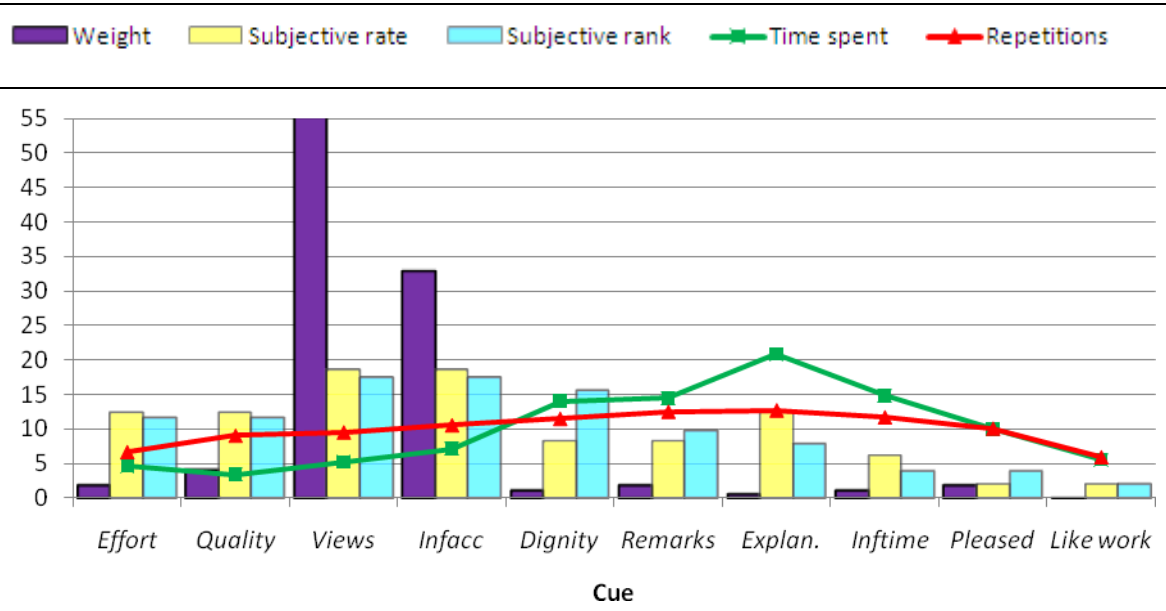
The relative weights for Judge LK273 show their policy to be heavily influenced by the salience of information being available in good time duiring the performance appraisal process. This Judge had an R^2 of 0.91 and the three most salient cues were all significant. This Judge's subjective ranking of the 10 cues accurately assigned the most importance to information accuracy and information in good time. Time spent revealing cues does not correctly represent objective importance as it would suggest that the interpersonal justice cues are most important and this was not the case. Judge LK273 scored 2 out of 3 on the CRT test, demonstrating moderate levels of cognitive control.

Judge	
MP236 *NB, change in scale	

Judge MP236 had an R^2 of 0.54 and whilst the explanations cue held the highest weight there were three significant cues. Interestingly, this Judge's objective policy was formed on the explanations cue alongside both of the inpersonal justice cues, which were also subjectively ranked as important. This Judge's policy found both the distributive and procedural justice items to be of minimal importance when reaching an overall justice judgment. Time spent revealing cues and frequency of cue acquisition do not reflect the objective cue policy. With a CRT score of 0 out of 3; Judge MP236 demonstrated a low level of cognitive control.

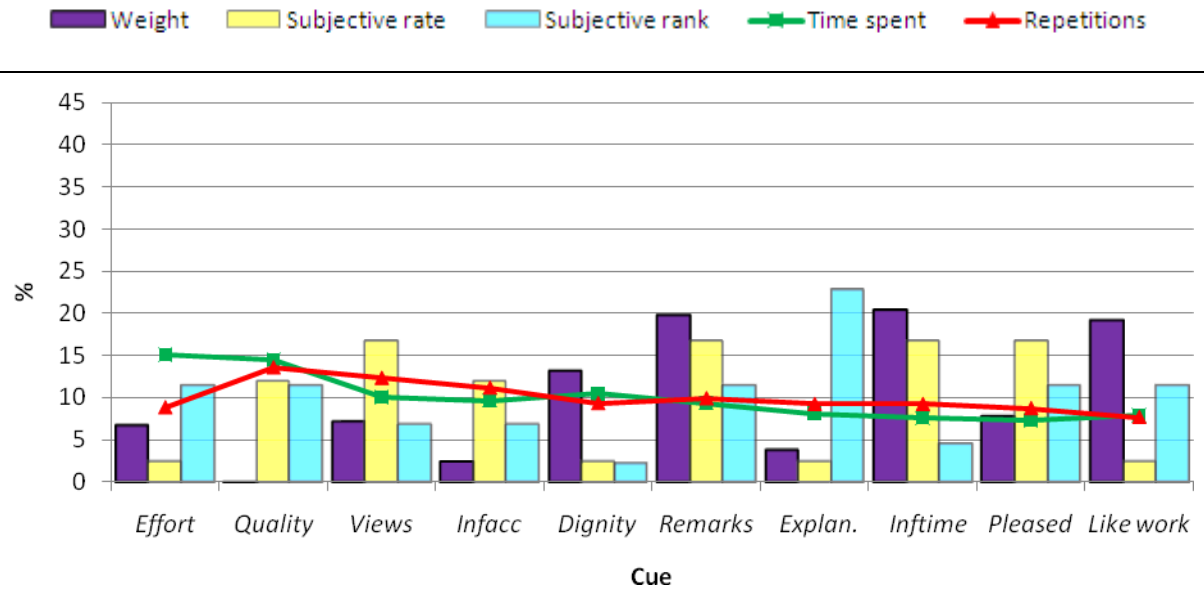
Judge	
PB2LR *NB, change in scale	

Judge PB2LR had two significant cues and an R^2 of 0.77. Relative cue importance for the 10 cues showed that information being available in good time was the most salient cue for this Judge. Judge PB2LR's subjective ranked and rated this cue as important for their decision making. They did however overestimate the importance of other cues. The time cues were revealed and cue repetition did not reflect their objective importance; in fact the lowest proportion of time was spent on the most salient cue. Judge PB2LR scored 1 out of 3 in the cognitive reflection test, suggesting lower levels of cognitive control.

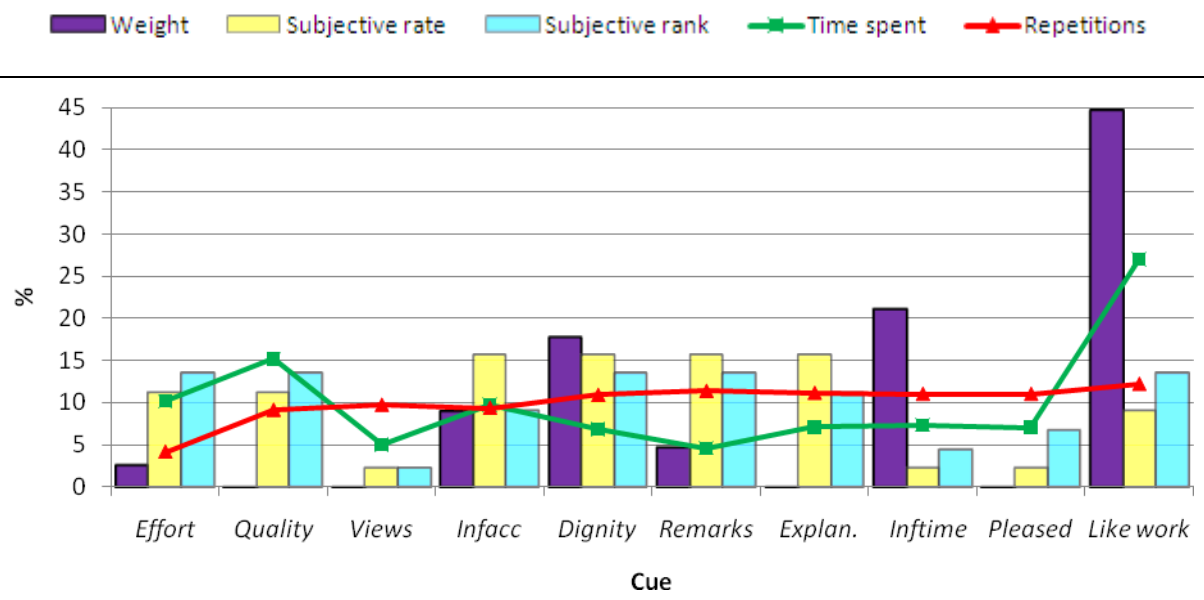
Judge	
PN2M3 *NB, change in scale	

Judge PN2M3 had an R^2 of 0.90 and had two significant cues, which between them contributed a relative importance of over 85% of their fairness judgment. This Judge accurately reflected in their subjective policies (ranked and rated) that these two cues were those which were most important to their overall judgment. The Judge spent most time revealing the interpersonal and informational justice cues but this was not reflected in their objective policy.

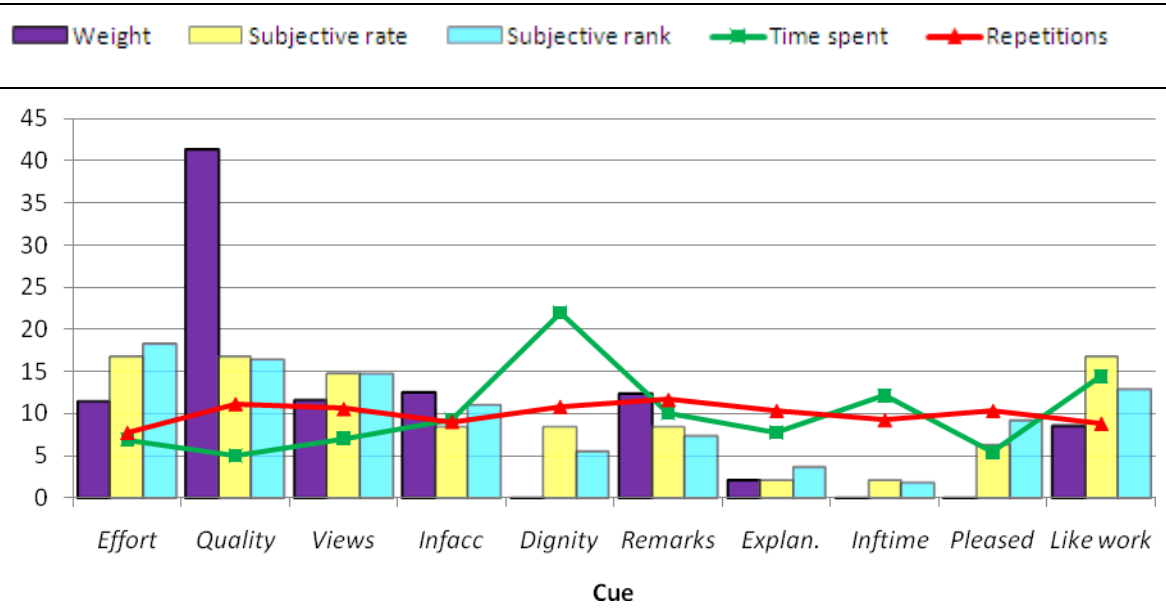
This Judge demonstrated a high level of self-insight with correlations between subjective rate and rank being strongly correlated to the objective policy they used; objective and rate r=0.64 (p=0.05), objective and rank r=0.75 (p=0.05), and rate and rank r=0.85 (p=0.01). However, with a CRT score of 0 out of 3; Judge PN2M3 demonstrated a low level of cognitive control.

Judge	
QT24M	

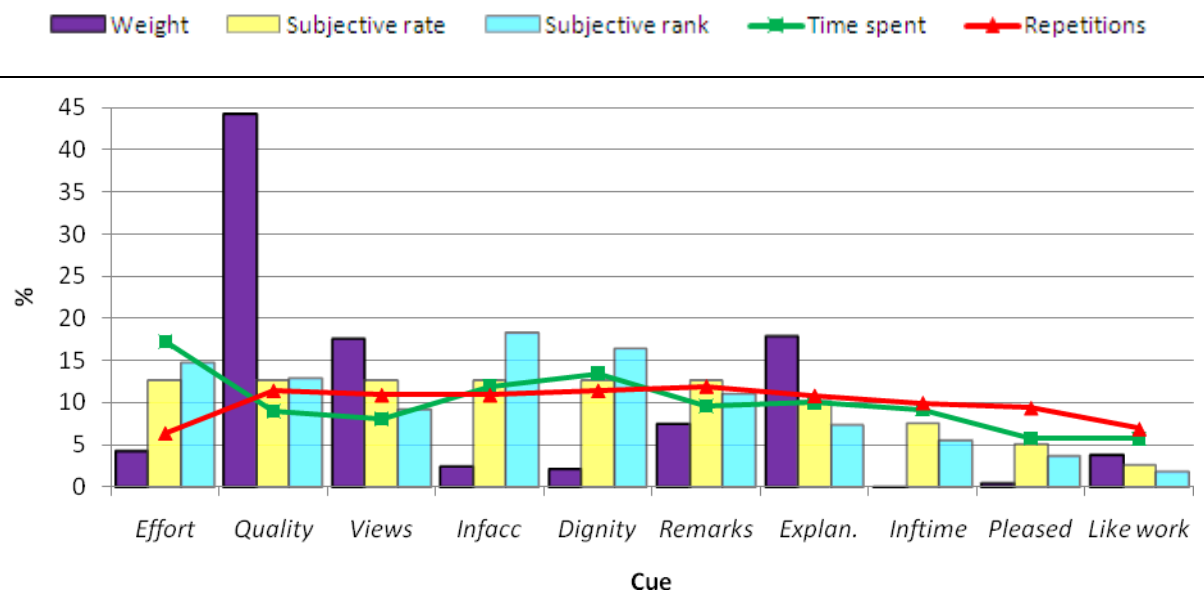
Judge QT24M had a very low R^2 at 0.19 and had no significant cues; they used a policy that encompassed a number of cues. Objective relative weights show that the Judge utilized all cues except whether the appraisal outcome reflected the quality of work done. Neither time spent revealing cues nor number of cue acquistions reflected the objective policy of Judge QT24M. Judge QT24M scored zero in the three-item CRT test, demonstrating a low level of cognitive control.

Judge	
RE24P	

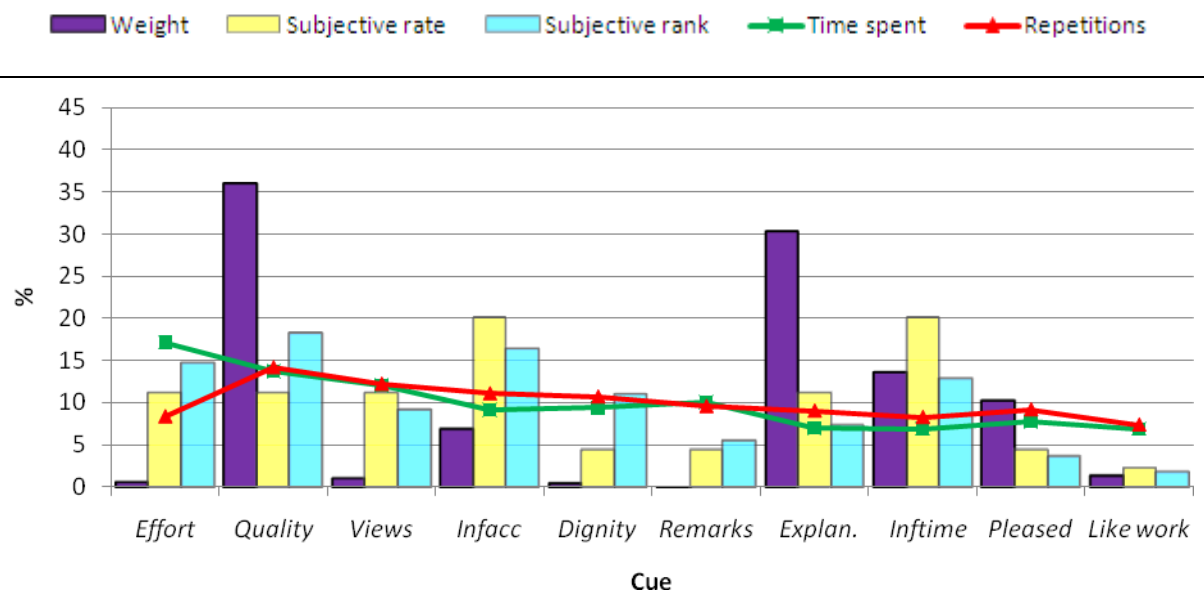
Judge RE24P had an R^2 of 0.38 and one significant cue, whose weight accounted for 45% of the overall fairness judgment. For this Judge the dignity cue and information being available in good time cue were also relatively important. This Judge found the responses relating to outcome reflecting quality of work, an opportunity to express own views and perspectives during the appraisal, veing provided with adeqaute explanations and the appraisee being pleased with the outcome did not feature in their actual decision making policy. Time spent on indiviudal cues varies, with most time spent on the likes working for employer cue, this was also the one that was revealed the most frequently by the Judge. Judge RE24P scored zero on the CRT test, suggesting low levels of cognitive control for this Judge.

Judge	
RS28L	

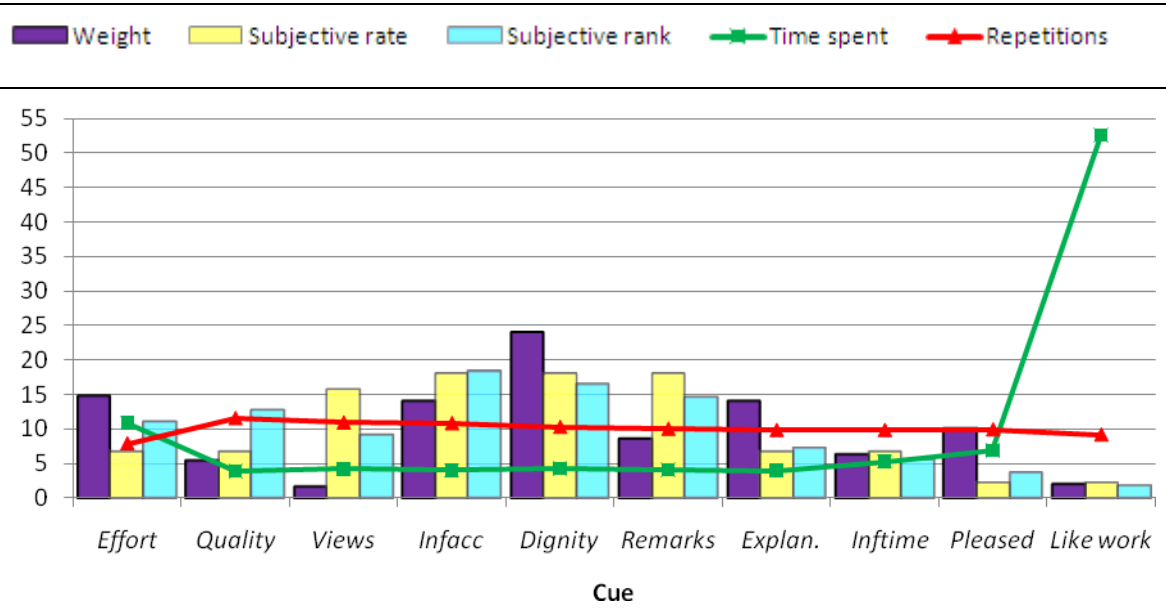
Judge RS28L had an R^2 of 0.86 and three significant cues. Having the quality of work reflected in the outcome of the appraisal was the most important cue for this Judge. This Judge spent their cumulative time erratically across the 10 cues, but whilst most time was spent on the dignity cue this was negligible to their final objective policy. This Judge's subjective policies weigh the distributive and procedurally just cues as most important alongside whether the appraisee liked working for their employer. Judge RS28L correctly answered 1 out of 3 in the cognitive reflection test, suggesting lower levels of cognitive control.

Judge	
RX233	

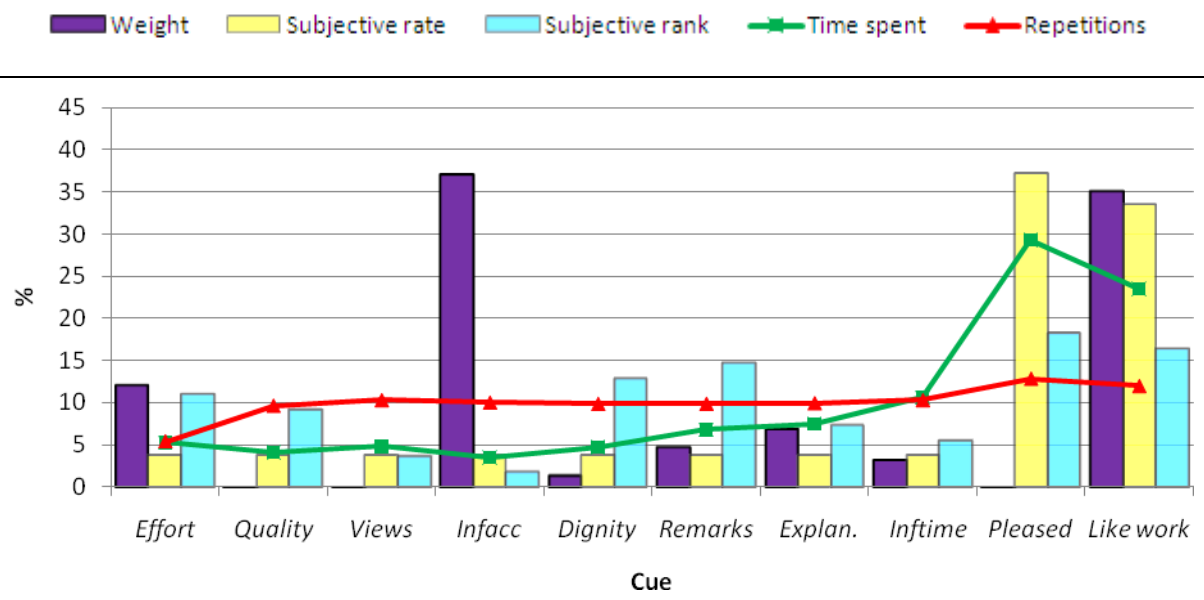
Judge RX233 had an R^2 of 0.91 and had 4 significant cues. The relative cue weights show this Judge's policy was largely driven by whether the appraisal outcome reflected the quality of work done. Subjectively this Judge perceived that the two interpersonal cues would be most important to their decision making but this was not the case in practice. Time spent on the individual cues better reflects the individuals subjective ranking of cue importance rather than the objective relative importance of the cues. Judge RX233 scored 0 out or 3 on the CRT test, demonstrating a low level of cognitive control.

Judge	
SH2L4	

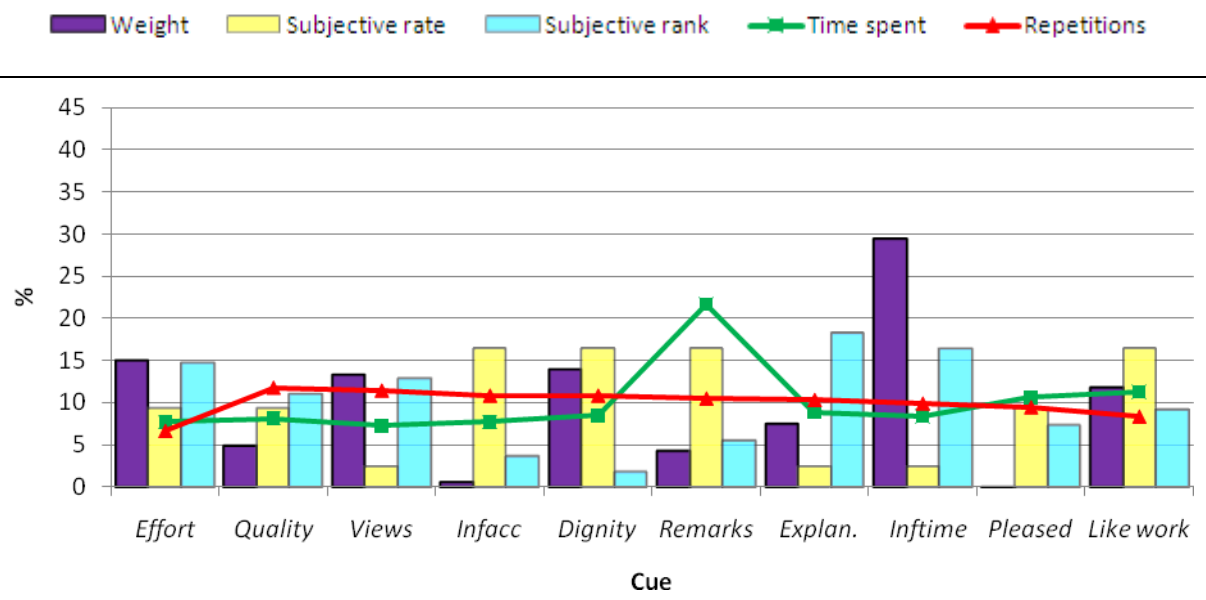
Judge SH2L4 had an R^2 of 0.92 and 4 signiciant cues. The relative weighting of cues for this Judge show that quality of work reflected in appraisal outcome and through explanations during the process are most important to an overall fairness judgment. The interpersonal cues had negligible importance for this Judge. Time spent on each individual cue and number of acquisitions per cue do not reflect the importance given to the two most salient cues. With a CRT score of 0 out of 3; Judge SH2L4 demonstrated a low level of cognitive control.

Judge	
TY23L *NB, change in scale	

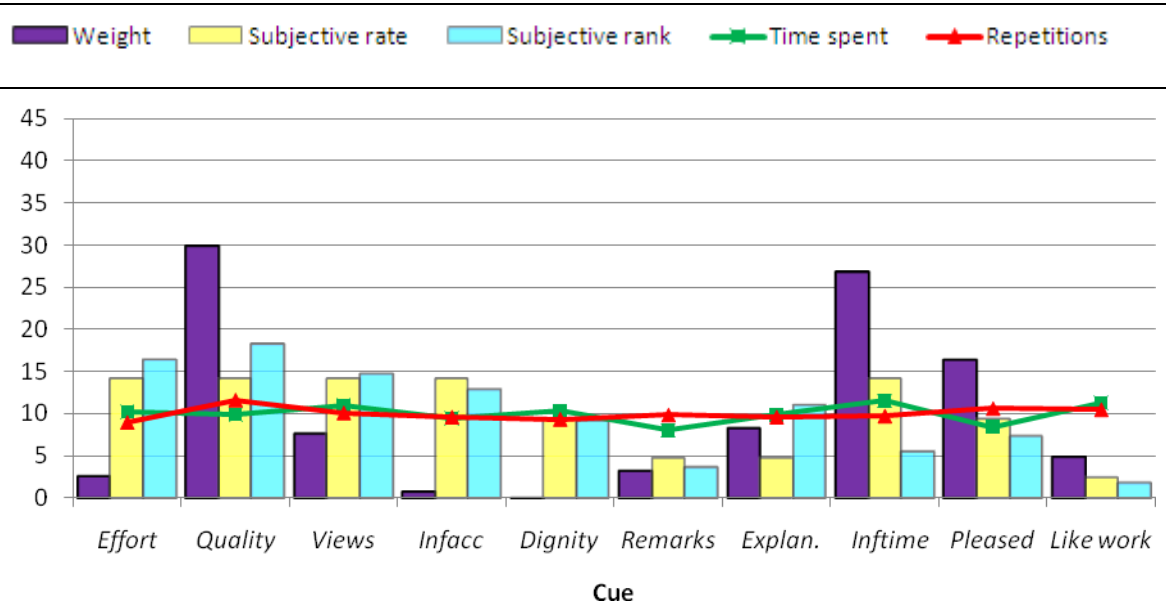
This Judge had an R^2 of 0.95 and had 7 significant cues. This Judge had an obejctive policy which had 7 significant cues and suggests that they had an objective policy which drew importance from many of the available cues. Time spent on each of the cues was invariable apart from the effort cue and the like working cue. 53% of total task time was spent revealing the like working cue but this was not reflected in either the Judge's objective or subjective policies. Judge TY23L scored 1 out of 3 in the cognitive reflection test, suggesting a lower level of cognitive control.

Judge	
YT297	

This Judge had an R^2 of 0.84. Of all the Judges, Judge YT297 had the strongest subjective policy, rating the pleased and like working cue as particularly salient to their reaching a justice judgment, and whilst like working was objectively salient, being pleased with the appraisal outcome was not. An appraisal based on accurate information was most salient for this judge and the effort of work being reflected in the outcome was also significant. This Judge spent the most time on the two non-justice items (those which they subjectively rated as most important) and these cues were also viewed the most during the task. With a CRT score of 0 out of 3; Judge YT297 demonstrated a low level of cognitive control.

Judge	
ZA26A	

Judge ZA26A had an R^2 of 0.92 and had five signifcant cues, meaning their policy drew on information from a range of cues. The most salient cue for this Judge was that the information was available in good time. This Judge spent the most time viewing the remarks cue but this was not reflected in their objective policy. Judge ZA26A demonstrated a moderate level of cognitive control, scoring two in the three-item CRT test.

Judge	
ZC274	

Judge ZC274 had an R^2 of 0.86 and had three significant cues. 57% of the variance in the overall fairness judgment was explained by the quality and information in good time cues. Number of cue repetitions was consistent across the task and time spent revealing each cue did not reflect the objective policy used by the Judge. Judge ZC274 scored 0 out of 3 in the cognitive reflection test, suggesting a low level of cognitive control.

Figure 7.11 - 7.60: Individual Judges' decision making objective and subjective policies, and decision making processes

7.4.5 One policy fits all?

The above graphs (figure 7.11-7.60), which show the objective policy for each Judge, show there to be much variance with regards to the relative weightings assigned to individual cues. As such there appears to be no one objective policy used by individuals in the sample when reaching an assessment of the overall fairness of performance appraisals.

To analyze between-individual differences, hierarchical cluster analysis is performed in order to seek to explain variances in judgment policies. The relationship, or differences, between Judges' policies was computed using Squared Euclidean distances which use unstandardized data, and Ward's cluster method was adopted.

First, a non specified model was run using unstandardized regression coefficients and individual's R^2, in order to see how individual's judgment policies could be grouped. The resulting cluster analysis shows individuals to use many judgment policies to derive an overall justice judgment.

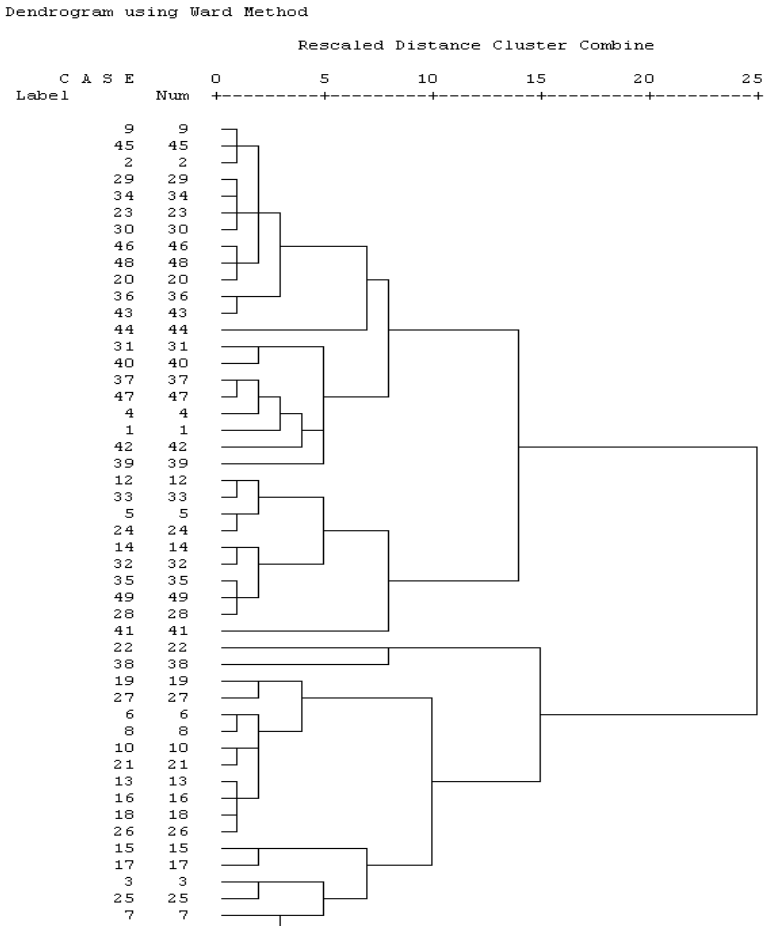


Figure 7.61: Cluster Dendogram

The examination of agglomeration coefficients suggests the use of 2 or 4 cluster groups, which is also illustrated in the dendogram in figure 7.61. ANOVA tests were then used to explore whether judgment policies could explain how individuals were clustered into groups of similar policies.

At two clusters, there are statistically significant differences between groups and CRT score (p=0.01), but there are no significant differences between the cluster groups based on the personality measures. Individuals grouped in cluster 1 have a significantly lower CRT score (M=0.71) than those in cluster 2 (M=1.56).

At four cluster groups, the available personality measures of individual difference were not statistically significant meaning that there are no significant differences between the cluster groups according to conscientiousness and agreeableness of individuals. There is also no statistically significant cluster differences when groups are examined based on level of cognitive control demonstrated in the CRT test.

Future studies which include a wider range of individual difference measures will be in a stronger position to conclude between-individual differences in judgment policies used when reaching an overall fairness judgment. The results of this test suggest that whilst individuals differ in cue utilization and how they form their overall justice judgment, these differences were not adequately explained using the three measures of individual difference reported in this study.

7.4.6 Time spent revealing cues

The use of process tracing software enabled the total time spent by a Judge on the decision making task to be recorded. In addition to this, it was also possible to calculate the time spent reaching an overall justice judgment on each appraisal situation, and also on each individual cue. The time spent revealing an individual cue was calculated by subtracting the time at "mouseout" (conceal) from "mouseover" (reveal) for each cue.

For this sample of Judges there is no statistically significant relationship between the time Judge's spend exposed to the cues and cue weight (importance). Hypothesis 1 is not supported. The graph in figure 7.62 below shows the relative weight assigned to each cue for the whole sample and also the average total time spent exposed to that cue.

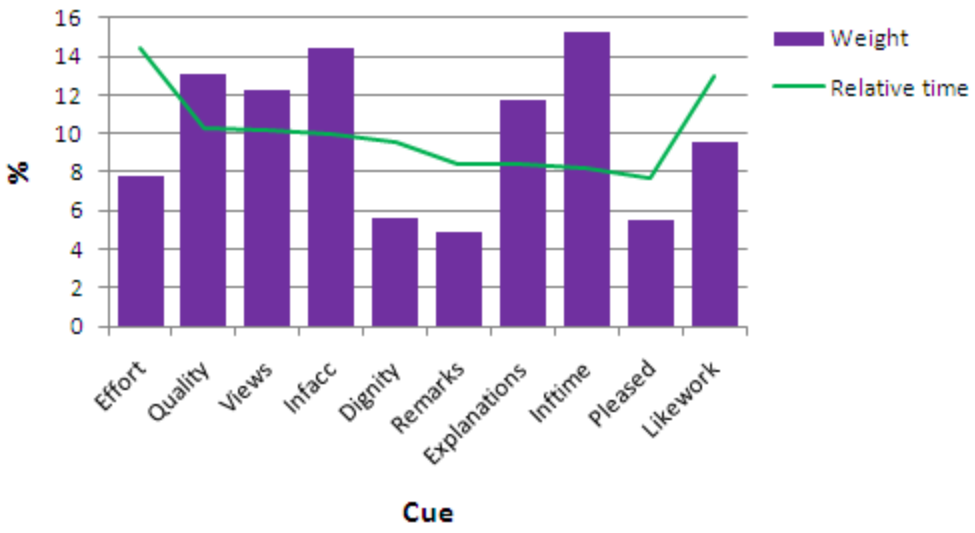


Figure 7.62: Average cue weight and relative time cue revealed

Across the 49 Judges the most time was spent revealing the effort cue (seen first by Judges in Order 1) and the like working cue (seen last by all Judges). However, as the task was administered in two orders it is important to see whether the effort cue had the longest exposure even when it was not the first available cue.

Figure 7.63 shows the proportion of time spent on each cue by Judges assigned to both versions of the task. Judges administered the task in order 1 collectively spent the most time looking at the first three cues available to them (effort, quality, views), whilst those in order 2 spent the most time revealing the like working cue, the effort cue, and then their first available cue – dignity. Despite being viewed for the most time, neither the like working for employer, nor the effort of work reflected in appraisal outcome cues were considered particularly salient when looking at the objective relative cue weights across the entire sample of Judges (figure 7.5).

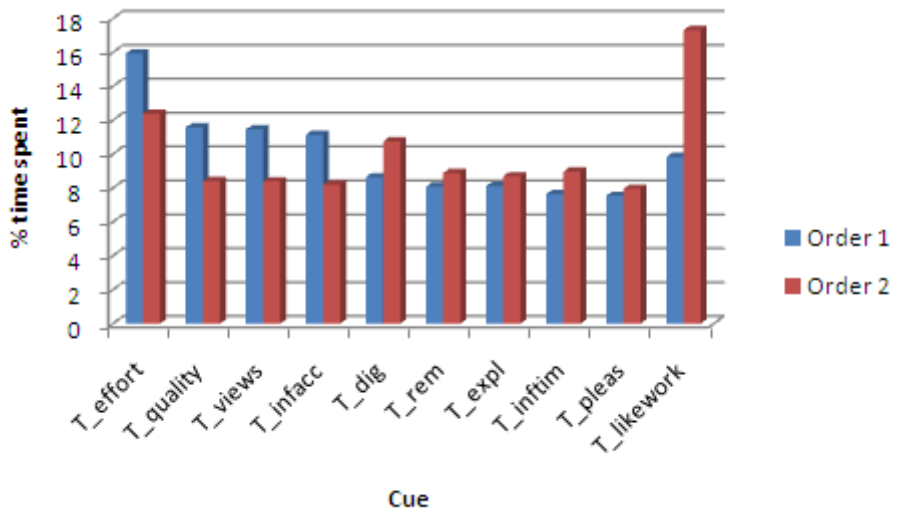


Figure 7.63: Proportion of time spent per cue by task order (All Judges)

As expected, there is a relationship between time spent on the overall decision making task and the number of cue acquisitions made. There was a strong positive correlation between these two variables (r=0.64, p=0.000, *n*=49). This time effect shows that in general the more time spent on the task, the more information that was used in terms of the number of cues that were revealed during the task.

7.4.7 Cue Acquisition

The process by which individuals revealed the cues to collect information about the appraisal experience was tracked during each experiment amassing a rich database of the cue acquisition patterns used by each Judge. Number of repetitions or frequency of cue acquisition varied widely across the 49 Judges. The average number of cue reveals per task across the 10 cues was 1365, and this ranged from 689 to as many as 4153 cue reveals. A Judge that revealed every cue once in making an overall fairness judgment for each appraisal would amass 560 cue reveals (10 cues *x* 56 appraisal situations). Judge YB174 made 4153 reveals, thus exerting the most effort in building up their judgment about the overall fairness of each situation, for this Judge the 10 cues explained 86.7% of their overall fairness judgment.

The graph in figure 7.64 shows the average frequency a cue was acquired across the task and the relative weight of each cue for the 49 Judges. There was no statistically significant

relationship between cue weights and the frequency a cue was revealed and thus hypothesis 2 is not supported.

Figure 7.64: Average cue weight and relative cue acquisition

The most frequently acquired cues (for all Judges and in both task versions) were the cues for quality, views and information accuracy (figure 7.65). These three cues were the 2nd, 3rd and 4th most salient for the Judges as a whole when making an overall justice judgment. Whilst receiving information in good time was the most salient objective cue, this was the 8th most acquired cue (out of 10). There was little variation in cue acquisitions across the two versions of the task.

The order in which cues were presented to Judges had no significant affect upon actual objective importance of the cues. That is, the depth of cue (whether it was available for viewing first or last in the list of cues) did not determine overall cue importance. Therefore, hypothesis 3 is not supported by this sample when only two different cue orders are used to manipulate cue depth.

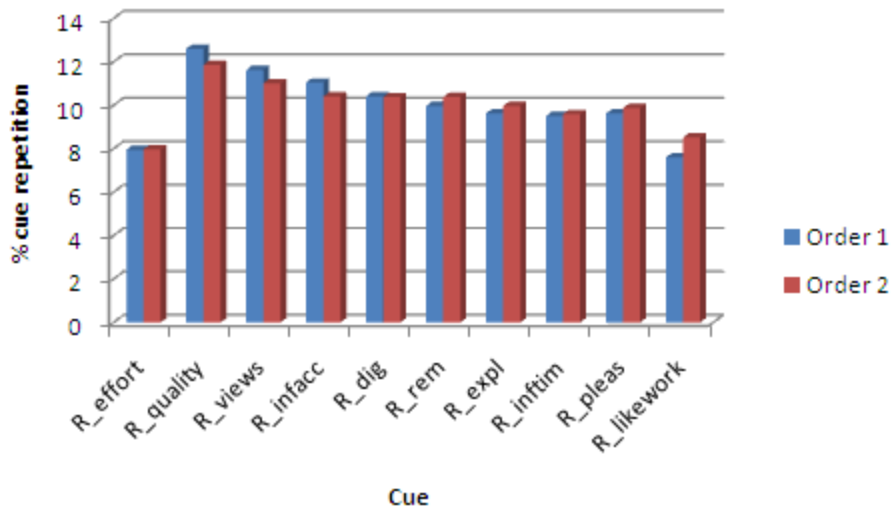


Figure 7.65: Proportion of repetitions per cue by task order (All Judges)

As an example of the differing patterns of cue acquisition used by Judges, figures 7.66, 7.67 and 7.68 below trace the order in which cues were revealed for one performance appraisal (profile 32/56). In total this experiment traced a total of 2744 judgment processes, and whilst only an example, these three figures demonstrate differences amongst the Judges. Such respondent led sequence illustrations enable the decision making process to be identified more clearly than experimenter led illustrations which are often a messy and convoluted method of depicting cue acquisitions (Jacoby *et al.*, 1987).

Notable differences between these three examples include; the length of the process, that is, the number of cue reveals before a judgment was made (Judge R31TV used 11, whilst Judge PC126 used 23), whether any cues are repeated before a judgment was made (e.g. Judge TP1M8), whether Judges made immediate repeats of cues (Judge PC126 repeatedly revealed cues on explanations, pleased, inftime, remarks and views), and whether the Judges made use of each of the available cues. Judge PC126 (figure 7.67) made an overall judgment on appraisal situation 32 without revealing the "likes working for employer" cue and its information (a cue negligible to their final objective policy).

Figure 7.66: Judge R21TV cue reveal for appraisal situation number 32

Figure 7.67: Judge TP1M8 cue reveal for appraisal situation number 32

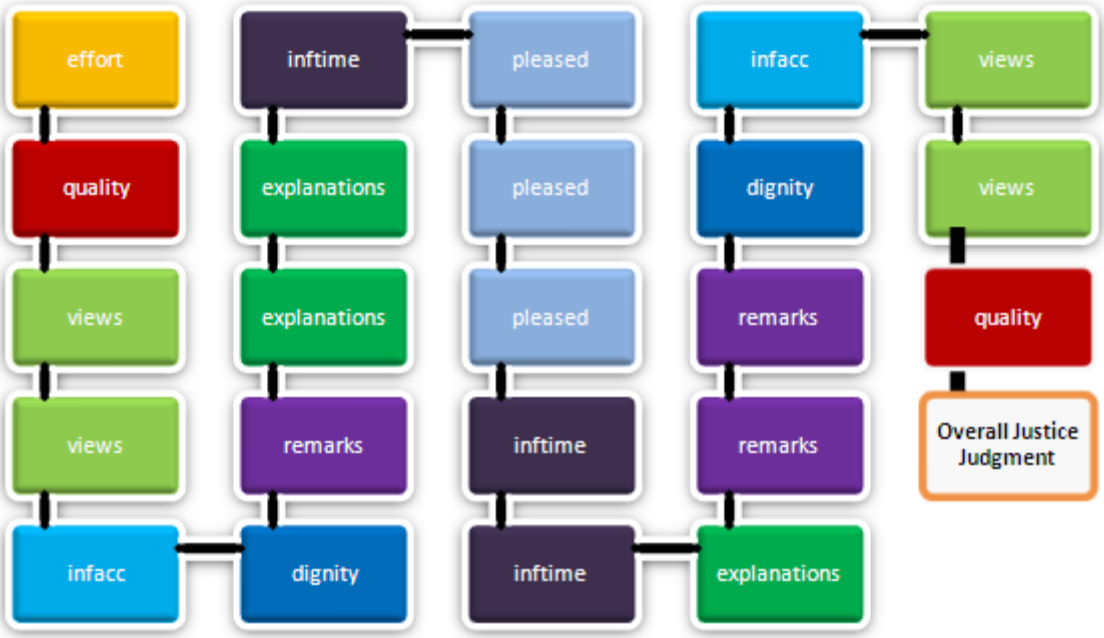


Figure 7.68: Judge PC126 cue reveal for appraisal situation number 32

7.4.8 Individual difference measures

Two personality scales were administered to all the Judges in order to test hypotheses which relate individual differences to the salience of antecedents in the formation of an overall justice judgment.

In order to test whether there is an interaction effect between the number of cue repetitions (cue acquisition) and individuals' level of agreeableness, on the weight assigned to the non-justice antecedents, all variables were standardized to permit tests for moderation.

First, the non-justice 'pleased' cue was tested. The means-centered cue repetitions of the pleased cue were entered in step one. In step two, agreeableness was entered (again, mean-centered to avoid possible problems of autocollinearity) and in step three, the interaction term (repetition of pleased x agreeableness) was entered. The dependent variable being the relative weight assigned to this cue. The results are shown in table 7.12 below and do not support the predicted hypothesis. Second, the above analysis was repeated for the non-justice dependent variable, weight of the 'likeworking' cue. Here, the interaction term is, repetition of likeworking x agreeableness. As shown in table 7.13 the interaction between repetition of the likeworking cue and individual agreeableness was not significant.

The tested interactions do not support hypothesis 5. Agreeableness does not moderate the relationship between the frequency of acquisition of non-justice cues and their relative importance.

	Standardized Coefficients ß
DV = Number of repetitions_Pleased cue	
Reps_Pleased	.27
Agreeableness	.05
R^2	.07
Adj R^2	.03
Reps_Pleased	.26
Agreeableness	.05
Reps_Pleased x Agreeableness	-.06
R^2	.07
Adj R^2	.01
ΔR^2	.00

**Correlation is significant at the 0.05 level (2-tailed)

Table 7.12: Moderation table: Interaction of pleased cue acquisition and agreeableness

	Standardized Coefficients ß
DV = Number of repetitions_Likeworking cue	
Reps_Likeworking	.17
Agreeableness	.21
R^2	.06
Adj R^2	.02
Reps_Likeworking	.19
Agreeableness	.21
Reps_Pleased x Agreeableness	.10
R^2	.07
Adj R^2	.00
ΔR^2	.00

**Correlation is significant at the 0.05 level (2-tailed)

Table 7.13: Moderation table: Interaction of likeworking cue acquisition and agreeableness

In order to test whether levels of conscientious moderate the relationship between cue acquisition rates and relative cue importance five tests of moderation were conducted; one for each of the known justice dimensions and one for the non-justice cues. Statistically significant interactions are only found for one dimension: procedural justice (see table 7.14). Hypothesis 6a is only supported for the procedural justice cues.

	Standardized Coefficients ß
DV = Weight_PJ	
Reps_PJ	.03
Conscientiousness	.07
R^2	.01
Adj R^2	-.04
Reps_PJ	.18
Conscientiousness	.08
Reps_PJ x Conscientiousness	.40**
R^2	.15
Adj R^2	.09
ΔR^2	.14**

*Correlation is significant at the 0.05 level (2-tailed)

Table 7.14: Moderation table: Interaction of procedural justice cue acquisition and conscientiousness

Conscientiousness moderates the relationship between the number of times the procedural justice cues are revealed (cue acquisition frequency) and the importance (weight) assigned to them. Figure 7.69 illustrates the direction of the interaction, and shows that for individuals high in conscientiousness the importance of the procedural justice items increases with cue acquisition. On the other hand, for individuals low in conscientiousness increased repetitions of the procedural justice cues does not result in increased importance, in fact, there is a slight decrease. Low conscientious individuals are less interested in attaching salience to procedural justice cues, and when they do make repeat acquisitions of these cues they do so in order to discount its importance from their overall judgment.

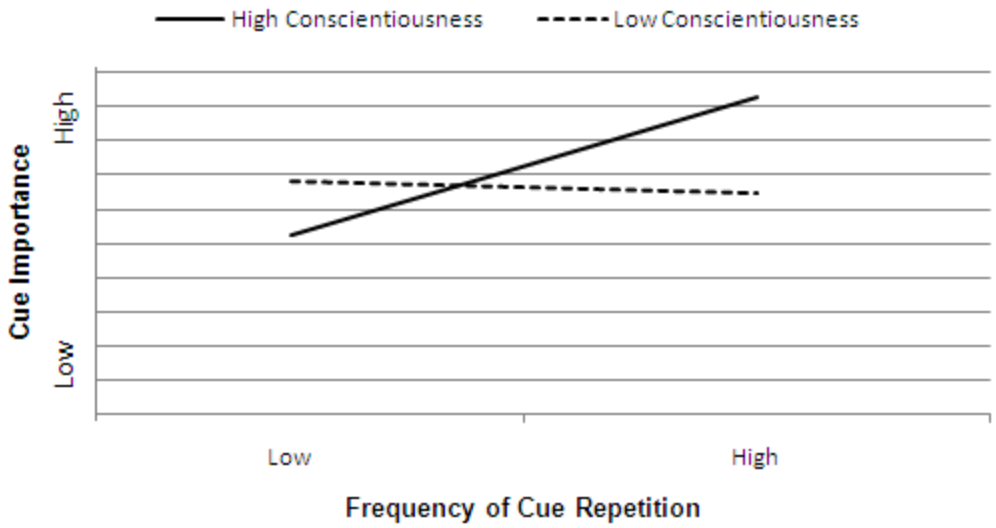


Figure 7.69: Conscientiousness as a moderator between acquisition of procedural justice cues and their importance (weight)

Conscientiousness only moderates the relationship for the importance of procedural justice cues. Given that individuals high in the conscientiousness trait are diligent and detail orientated then they are likely to exert effort in revealing the procedural justice cues as these cues provide information about the consistency and enactment of procedures used during the appraisal process. As a result, conscientious individuals who frequently view the procedural justice cues allocate higher weight to them in their overall perceptions of justice.

The results of study 2 do not support hypothesis 6b. There is no significantly positive relationship between CRT score and conscientiousness. This is surprising given that individuals who are more conscientious are more thorough and task orientated, and would thus be expected to exert more effort in solving the three problems of the cognitive reflection test. One explanation could be that conscientiousness being a personality trait does not reflect actual ability, and thus one cannot assume that conscientious individuals are also those who are able to perform well on any given test; increased effort and willingness does not equal performance or achievement. Alternatively, this could be explained by the measures used. Whilst cognitive control was measured using a three-item test, conscientiousness was measured using a self-report nine item scale, and individuals may have wished to appear more or less conscientious than they actually are and thus this scale is prone to social desirability bias.

7.5 Discussion

Justice research has identified antecedents which can lead to an overall justice judgment. The results of a small first study (Study 1) suggested that these antecedents are not equally weighted, and that individuals possess little insight into the process they used, in terms of the importance of each available cue, to their decision making. The aim of this second study was to firstly replicate the results of Study 1 on a larger sample, and secondly to use process tracing methods to reveal the processes used to reach an overall justice judgement. This study not only provides within-individual analysis of individual's decision making processes, but also permits some between-individual analyses. In addition, a comparison of objective and subjective cue weights indicates Judges' own self-insight, and a measure of cognitive control offers insight into how different individuals reach judgments of overall justice. This section first discusses the research questions posed in section 7.2, and then the hypotheses regarding the process analysis, tested in this study.

This study has shown that unequal cue weights are assigned (objectively and subjectively) across antecedents. Organizational justice researchers have identified many antecedents of overall justice, and have found these to fall into four broader dimensions; however, it is typically assumed (even though implicitly rather than explicitly) that each antecedent holds equal weight. This process tracing study supports the preceding policy capturing study in demonstrating that justice antecedents do not hold equal weight in the formation of an overall justice judgment.

Collectively, the most salient cues for assessing the fairness of a performance appraisal are that information is received in good time, that an appraisal is based on accurate information, that the outcome of the appraisal reflects the quality of work done and that the appraisee's views and perspectives are taken into account. The four most salient cues accounted for 55% of variance on overall fairness across the sample of Judges and supports that individuals make judgments on a relatively small number of cues (Slovic and Lichtenstein, 1971, Taylor and Wilsted, 1974).

For the sample as a whole, the least salient cues were that the appraisee was treated with dignity and respect and that the appraiser refrained from improper remarks or comments during the appraisal process. Thus, it seems that in this context, interpersonal justice cues were not important to the Judges in making overall justice decisions. This could be interpreted as

suggesting that the treatment of the appraisee by the appraiser has little impact upon the perceived fairness of the appraisal; that an appraiser could shout abuse to their appraisee or be rude and disrespectful, and get away with it, in the sense that it would not affect overall assessments of fairness. However, alternative explanations seem more likely. As briefly alluded to in the analysis section there are several explanations as to why the interpersonal justice items were considered the least important in the formation of an overall justice judgment. Firstly, the variance of interpersonal items was low and their mean high. This means that throughout the task the Judges would likely view this cue as being both more 'constant' and at the higher (less problematic) end of the 7-point Likert-scale, than the other cues, and may therefore attribute less importance to them (Slovic and Lichtenstein, 1971). A second reason that there was a lack of importance assigned to the interpersonal justice cues may be due to realism. As confirmed by the largely positive reports of fair interpersonal treatment during performance appraisals by the Raters in this study, the formalised procedures set in place for an appraisal may make this an unlikely situation in which to find extreme accounts of being treated with no dignity or respect or accounts of the appraiser making improper remarks or comments. The natural configurations collected to increase the representativeness of this study's design did not elicit much variance in interpersonal justice cues. Had a factorial design been used then it would have been possible to examine the extremes of interpersonal fairness, or, during an experiment it would have been possible to manipulate interpersonal treatment. For example, to have the assessor shout derogatory comments at the participant before they begin the task or treat them in an impolite manner, as used in Colquitt *et al.*'s (2006) study. In summary, the representative design of this study did not elicit the extremes of interpersonal justice ratings from the Raters and thus extremes in interpersonal injustice were absent. This is not necessarily a weakness of this study if indeed this corresponds with organizational reality, where it is simply highly unlikely that extremes in interpersonal treatment exist in performance appraisal contexts. In which case, a design that had included accounts of extreme interpersonal treatment would have provoked artificial findings and resulted in meaningless recommendations for practice. The situations used in this study reflected actual accounts of real performance appraisal experiences, and so unlike factorial designs recommendations for practice are made using natural configurations of cues.

Judges had little self-insight into the policies they used during the task. A comparison of objective cue weights and subjective ranking of cues showed Judges to largely underestimate the

importance of individual cues. In this study two measures of subjective importance were used. Correlation between objective and subjectively ranked cues was low at just r=0.24 and objective and subjectively rated cues at r=0.33. The correlation between the two subjective measures was r=0.58. Whilst individuals show some insight into how they think they are using the cues in forming their judgment; this does not reflect their actual (objective) policies. That individuals have a lack of self-insight is not new (Nisbett and Wilson, 1977, Slovic and Lichtenstein, 1971). Although retrospective subjective policies were collected in this study, they were collected immediately upon task completion and participants were provided with the cues in the same order that they had seen during the task, in order to assist in prompting recall. For justice research, this highlights an important weakness in self-report surveys. Individuals may be able to recall an unfair event at work but when asked what led to this decision (which justice antecedents) they are likely to underestimate the importance of some cues, whilst overestimating the importance of others. Einhorn and Hogarth (1981) offer three reasons why differences may occur between objective and subjective weights; 1) individuals lack self-insight, 2) individuals are unable to use cues with little variance, and 3) correlation between the cues could mean that cues which were not given attention during the task are wrongly assigned weight. The representative design in this study led to cues which whilst naturally occurring and configured, included two cues with little variance. To address this issue, future policy capturing studies should collect more reflections of actual experiences from Raters and then include a sample of these with cue variance. Nonetheless, when conforming to representative design and providing real combinations of cues, there will always be some cues with less variance than others, as in real-life. In this research, the addition of more appraisal experiences to be judged would not have been an appropriate method for increasing the variance within cues (see review of policy capturing, chapter 4).

At the individual level, specific antecedents were more salient for certain Judges. This study has shown there to be large individual differences in the policies used by Judges to make overall justice judgments and individual cue salience within those policies. For example, Judge TG17B had a policy driven overwhelmingly (64%) by the "like working for their employer" cue, whilst Judge R61YV's policy drew on all the available cues with no individual cue accounting for more than 17% with each cue making an average contribution of 10% to the overall justice judgment. The number of statistically significant cues in a Judge's policy ranged from 0 to 7 out

of the 10 cues (average=2.3, and mode=1). There was much variation in the combination of the 10 cues to an overall judgment between the Judges, with R^2's ranging from 0.17 to 0.98 (average=0.77).

The results of this study show the uniqueness of individual policies used when reaching a judgment of overall fairness. However, the individual difference measures included in this study were inconclusive as to whether and how personality may affect how individuals reach judgments of overall fairness. Indeed, the differences in policies may be explained by other variables not rooted in personality, such as work experience or relationship with the appraiser (see future research section 8.7).

Using process analysis it was hypothesized that the time spent revealing a cue would be a sign of its assigned weight and importance, and similarly that the number of times a cue was revealed (level of cue acquisition) would signify cue weight and importance. However, this study failed to confirm either of these hypotheses (1 & 2). The time spent looking at a cue does not signify cue importance, as it may be that the length of exposure does not reflect processing. It was expected that as cues were revealed sequentially, the cues were being processed for the time the cue was revealed, however, the Judge was only viewing a number on the Likert-scale and thus measuring the length of time exposed to the cue may be inappropriate. Second, the cues were revealed when the mouse was rolled over the relevant box and thus cues may have been inadvertently revealed when passing to other 'more relevant' cues and contributed unnecessary noise to the time and repetition measure. In future studies, the task could be designed in a way that the Judge had to 'click' the mouse button over the box to reveal the cues, and by reducing the noise, it may be that the relationship between cue acquisition and significance becomes salient.

Previous research has reported mixed results with regards to the effect of cue order on the salience of cues. Slovic & Lichtenstein's (1971) paper on information processing would assume that recency would occur due to the use of numerical cues, with the last viewed the most influential. Whilst justice researchers such as Van den Bos *et al.* (1999) posit that those cues viewed first would have the stronger effect, a notion supported by Larcker & Lessig (1983) in the process tracing literature. There was no evidence in this study to support either of these arguments. The data from the 49 Judges did not confirm a relationship between cue depth and cue salience, and did not confirm hypothesis 3.

The process of decision making was not influenced by the order in which the cues were presented, suggesting that the importance and variability of the cues themselves was more important than the order in which they were presented. In this study the cues were only administered in one of two orders and thus possible cue depth effects may not have been visible. Whilst Judges were free to reveal the cues in whichever order they wished, future studies should administer tasks with cues presented in more random orders (both within- and between-Judge) to investigate further the relationship between cue order and cue importance and how individuals process justice judgments.

By including a measure of cognitive control this research begins to address more than just *how* individuals reached an overall justice judgment by asking *how different types of individuals* reach overall justice judgments. The results support hypothesis 4a, that there is a positive relationship between R^2 and level of cognitive control demonstrated by Judges ($r=0.34$, $p=0.01$). When Judges were split by those scoring at the bottom half on the CRT and those in the top half, the average R^2 rose from 0.74 to 0.85. This may suggest that the ability to make consistent justice judgments using the available information is somewhat dependent on the cognitive ability of an individual. This finding could be attributed to the design of the study. In process tracing studies using Mouselab, information is available one piece at a time and thus it is up to the Judge to process this information systematically in reaching their judgment. Whilst Judges with higher levels of cognitive control demonstrated more reliance on the 10 cues, in the real world justice judgments are not formed in such a sequential way and thus may not require the highest levels of cognitive ability. However, the method used in this study determined that Judges could only move forward through the appraisal situations. As the Judges were not permitted to compare appraisals in order to make a relative assessment of fairness (unlike Study 1), then the strength of consistency of judgment across appraisal situations, as measured by three repeated appraisal profiles, supports that individuals are able to make consistent overall justice judgments across situations.

CRT score was also shown to positively relate to the frequency with which cues were acquired during the task, supporting hypothesis 4c. Individuals who had higher levels of cognitive control spent longer processing the available information before making a judgment. There was a positive correlation between CRT score and time spent on task completion, but this was not significant and therefore does not support hypothesis 4b. As expected, there is a strong

correlation between the time spent on the task and the number of cue acquisitions made (r=0.64, p=0.00). That is, time spent on a task was mainly explained through a higher number of cue acquisitions, and less through spending more time looking at each cue during any acquisition.

Individual's level of conscientiousness was shown to moderate the relationship between the repetition of procedural justice cue acquisition and its relative importance in forming an overall justice judgment (hypothesis 6a). Conscientious individuals are most concerned with an appraisal being enacted according to fair procedures across individuals, and thus they were interested in the procedural justice cues, and this interest was reflected in the importance assigned to these cues. There was no statistically significant relationship between level of conscientiousness and an individual's level of cognitive control; this finding is contrary to hypothesis 6b. One possible explanation is that whilst conscientious people may be expected to be diligent and thorough and thus exert more effort during the task, conscientiousness is a personality trait rather than an ability and thus it does not influence actual performance or an individual's ability to overcome initial impulses, which is shown via cognitive control.

Until now, justice research has focused on analysis of overall justice judgments or its antecedents, rather than analysis of the process itself by which overall justice judgments are made. The use of process tracing software in organizational justice research, and in particular in the formation of overall justice judgments, has provided an insight into the dynamic processes used by individuals in arriving at an overall justice judgment from known antecedents.

7.6 Limitations

The purpose of this study was to gain further insight into the process of making an overall justice judgment and in doing so identify the relative importance of the antecedents which led to this decision. This complex study design which encompasses representative design, a policy capturing methodology and process tracing software offered some insight into the cognitive processes used by individuals when rating the fairness of a situation, in this case, the fairness of performance appraisal experiences. However, it is acknowledged that there are limitations to this study.

Subjective policies were collected from each Judge by having them, upon task completion, both rate and rank the cues in order of perceived importance to their decision making. This method of policy collection is retrospective and thus may not be an accurate

reflection of the process followed during decision making. However, the subjective policy was collected immediately after the decision making task had been completed using the same 10 cue template, and the use of a structured and repeated task meant that by the end of all the situations the Judge would be familiar with the 10 cues used. An alternative method of subjective policy collection would have been to do so in real-time by having each Judge describe verbatim the process used to reach each overall fairness judgment during the completion of the task. However, this would have distracted the Judge from the task in hand, and would have added noise to the time spent on individual cues, and on task completion, whilst they described their thought processes concurrently.

Process tracing is also susceptible to the policy capturing limitations in Study 1, specifically that only a limited range of cues are used. It is not possible to include every antecedent which an individual may use whilst forming their judgment. Rather, the researcher is able to determine, from a well piloted and sampled set of cues, the relative importance of individual cues in the process of decision making.

Whilst an advantage of process tracing methods is that it is possible to monitor the cue acquisition behavior of individuals, one limitation is that cues could only be viewed sequentially, and thus there is the possibility that Judges work serially down the list of available cues. Whilst not found in the two different versions of this task, the order in which cues are presented may affect their importance when making a judgment and thus future research should involve more randomised versions of the task, varying the position and order of the cues.

Further, the decision task completed by the Judges was constrained, as they had to actively engage with the search for information on which to base their judgment. This process may have deterred Judges from revealing and accessing all the information they would naturally desire before making a judgment. However, the use of Mouselab and the mouse pointer is not too complex a task that it would discourage engagement, as most individuals have experience of using the mouse pointer to select information on a computer screen, and thus this technique requires less effort than compared to information display boards for example.

As previously discussed, there was little variance on two of the cues presented to the Judges and also there were some high inter-correlations between some of the cues. In the case of this study though, which was adhering to the principles of representative design set out by Brunswik (2001 [1955]), these cues represented configurations that were naturally occurring and

found in the real world (through the sample of Raters). The lack of importance attributed to the interpersonal justice cues may be representative of the fact that these are simply not salient cues in the context of real life performance appraisals.

7.7 Future Research

This study has demonstrated the possibilities for extending justice research using a representative design and process tracing techniques and in doing so has identified areas for future research.

Process tracing techniques have provided an insight into the overall justice judgment process, and moreover have shown individual variation in cues used in decision making, and the process of cue acquisition behavior. Whilst representative design was used to provide the situations and cues which were reflective of the real world, the study was designed within the context of performance appraisals, and the cues and situations were developed from one sample population. Future studies could extend this representative design to investigate whether cue importance differs within-individuals for different types of justice decisions, such as the fairness of a promotion, or the fairness of job candidate selection. An understanding of overall justice judgments can also be furthered through an examination of the cues that are most salient to different types and samples of decision makers in different contexts (see overall recommendations for future research in section 8.5-8.7).

7.8 Conclusion

The results of this process tracing study support those found in Study 1, namely that there is unequal importance assigned to individual antecedents during the formation of overall justice judgments. Individuals lacked self-insight when asked to reflect on how they believed they had reached a justice judgment (in terms of the salience of individual cues). However, individuals were shown to be consistent when making justice judgments across situations. Two personality measures and a measure of cognitive control were used as measures of individual difference to see whether they can explain variation in policies, but are inconclusive in explaining how individual differences affect the formation of justice judgments from antecedents. The results demonstrated that conscientiousness moderated the relationship between the frequency of cue

repetition for procedural justice and its subsequent weight. However, there was no significant relationship between agreeableness and the weights assigned to the non-justice items.

This research permits the decision maker to identify and collect all the information (from a given set of cues) that they deem necessary in order to make a judgment about the overall fairness of a situation. Fairness heuristics theory (Lind, 2001a) has previously shown how individuals form justice judgments given limited information which they take as a proxy for other information which is not available. This Study builds on this, and has provided an insight into the process of making overall justice judgments when individuals can actively engage in the process. The results suggest that Judges systematically build their overall justice judgment using a range of cues, which they are able to use consistently across different situations, even when unwittingly aware of which cues they deem most salient.

This study has demonstrated the use of process tracing software in organizational justice research. Moreover, it has done so adhering to a representative design. Unrealistic cue configurations were replaced by sampling individuals' real world experiences of performance appraisals and using their responses directly as the situations on which judgments are made. This study demonstrates the possibilities for process tracing research in organizational justice and identifies avenues of further research within the field. Process tracing provides access to the "black-box" that exists between a stimulus and response (Todd and Benbasat, 1987), and here has offered an insight into the process by which overall justice judgments of performance appraisals are formed from a specific set of antecedents.

Chapter 8: Conclusions

8.1 Introduction

The two studies combined in this thesis provide a substantial contribution to the field of organizational justice, but also to researchers engaged in policy capturing and process tracing research, through the use of a representative design. As the context used to explore the relative importance of justice antecedents in overall justice judgment was performance appraisals, recommendations for practitioners doing performance appraisals are also proposed.

First the implications of the findings of the two studies are presented for organizational justice researchers (section 8.2), researchers using policy capturing methods (section 8.3), and practitioners who conduct performance appraisals (section 8.4). Suggestions for future research are then directed at each of these three areas, before I express my final thoughts in section 8.8.

8.2 Implications for Organizational Justice Researchers

Justice researchers have identified the possible antecedents associated with perceived unfairness, and also the consequential changes in behavior and attitudes that can result from perceived injustice. However existing research was less informative about how individuals form overall justice judgments. In addition, the common methodological choices made by justice researchers prohibit close exploration of the judgment process. To address this gap, the two studies in this thesis set out to explore the formation of overall justice judgments from individual antecedents.

In chapter 2 I illustrated the assumptions made by researchers in determining an overall justice judgment (see also figure 2.1 for a summary). Typically, an overall justice judgment comprises of the sum of its justice dimensions, with these being formed from the summation of their antecedents. The primary research question of this thesis was to explore the relative importance of individual antecedents that are used by individuals when making an overall justice judgment.

The two studies conducted in this thesis, which adopted different methodological tools, suggest that overall justice judgments cannot be accurately captured with existing measures which favour equal weights of antecedents. First, the presence of antecedents does not ensure their salience to an overall judgment, rather antecedents are weighted, and these objectively (and

subjectively) assigned weights differ between individuals, which can have an impact upon the overall justice judgment made. Moreover, some cues may be negligible to an overall justice judgment. The presence of cues does not necessarily mean that they are processed by an individual, and even when they are, their contribution may be insignificant. For example, the within-individual analysis in study 2 has shown that for some individuals certain cues hold zero weight (objectively) to an overall fairness judgment, despite information on that cue being available during the decision making process.

Second, the salience of the role of the justice dimensions varies between individuals. By way of example, for some people distributive justice antecedents, such as an appraisal outcome that reflects the effort and quality of work, are most important to determining an assessment of overall fairness, whilst to others, the enactment of correct procedures (procedural justice) is more important. Differences in the importance of the justice dimensions have been shown through the objective judgment policies used by individuals which indicate the weighting assigned to each antecedent representing the justice dimensions.

Therefore, in contrast to the process of justice judgments illustrated in chapter 2, figure 2.1, the formation of an overall justice judgment can be better represented through an adaptation of Brunswik's lens model, as shown in figure 8.1 below. For a given event, details about the specifics of the event are emitted in the form of antecedents. The antecedents cover a whole spectrum of information and in the case of organizational justice, can reflect each of the four known justice dimensions (shown in figure 8.1 as, DJa, PJa, INPJa, and INPJa). The external validity of a judgment is based on how well these antecedents reflect the actual event in the real world. At the other side of the lens model is the overall justice judgment. The arrows joining the antecedents to an overall decision represent cue utilization by an individual in decision making. The two empirical studies show the antecedents to be of unequal and non-specific weights, or even negligible to the final judgment. It should be noted however, that the width and type of the arrows in figure 8.1 is not representative but rather illustrative of the differing importance assigned by individuals to the antecedents.

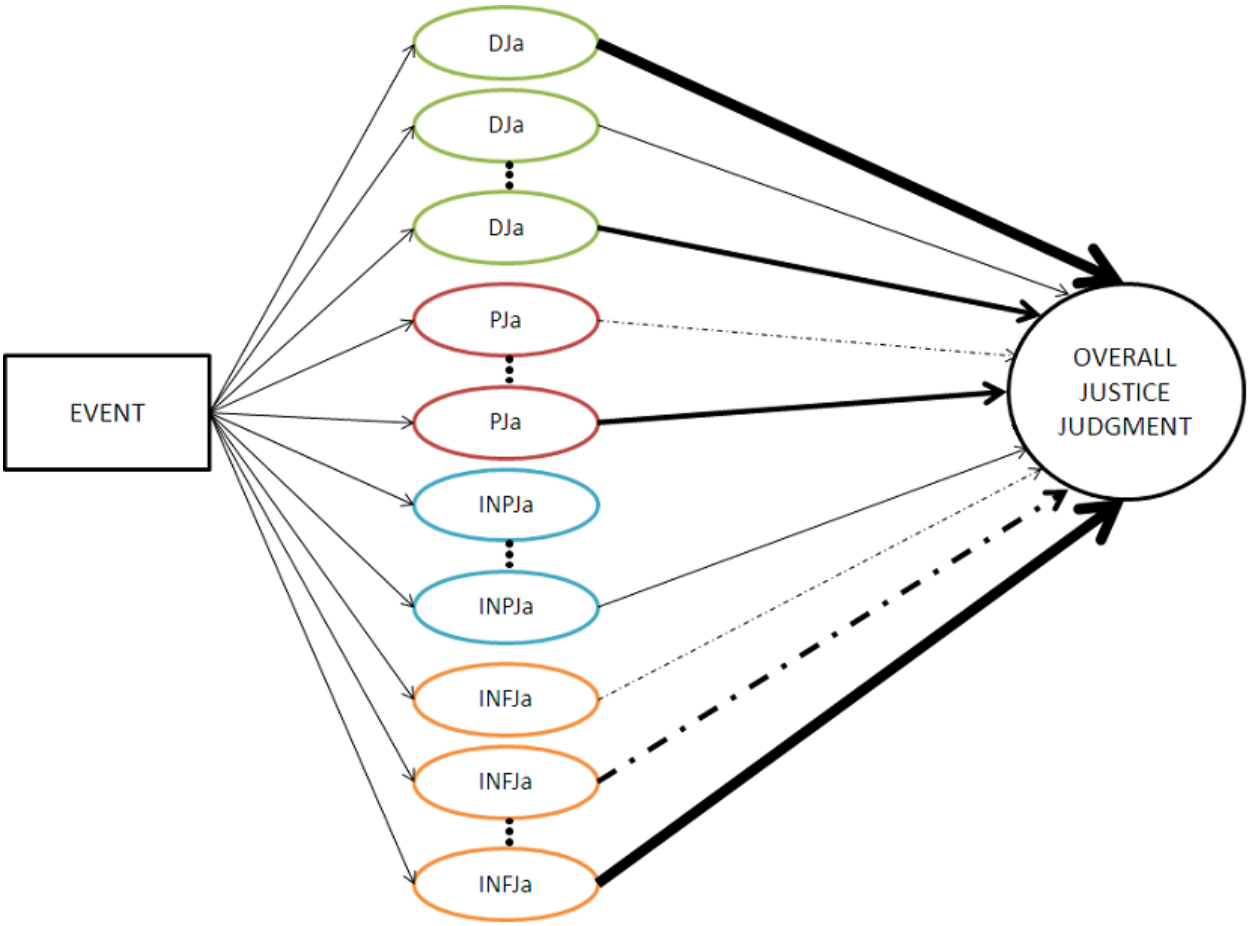


Figure 8.1: A Lens Model of Overall Justice Judgments

The results of the two studies suggest that organizational justice perceptions should be considered both through their individual components (dimensions and antecedents) and at the overall level. The results also support that individuals use, and differentiate (albeit unwittingly) between individual justice antecedents (Colquitt, 2001). In addition, the participants who acted as Raters and reflected on their actual experiences of performance appraisals were able to distinguish between interpersonal and informational justice items, with them assigning high means and low variance to the interpersonal justice items, and higher variance on the informational items. This lends additional support that justice is, and should be, viewed through its individual constructs (Colquitt, 2001, Cropanzano *et al.*, 2001a, Levy, 2001), and more specifically, that interactional justice should be measured though its interpersonal and informational facets as demonstrated by Greenberg (1993b,c).

The empirical studies in this thesis have shown that individuals differentiate between the justice antecedents in terms of the importance they assign to each. This suggests that researchers should not solely concern themselves with measuring overall justice, but also with measuring individual justice facets and antecedents. Whilst a holistic view of justice posits that individuals form overall impressions when judging overall fairness and "respond to whatever information is both available and salient" (Greenberg, 2001; 211), this does not take into consideration the individual differences and variations found to exist in judgment policies. These studies have shown that not only do individuals discriminate between the different facets of justice when formatting overall justice judgments, but that they do so consistently across situations.

To encourage further insight into the construct of overall justice, it is proposed that researchers include measures of individual antecedents alongside measures of overall justice. In this way, the researcher can explore the amount of variance that can be explained through either justice antecedents or an overall measure of justice. This technique can also be used to identify individual differences which may be present in perceptions of fairness and salient antecedents surrounding a given event or entity.

As a subjective judgment, there exists no external correlate with which to compare a justice judgment, and the researcher must therefore rely on accounts given by individuals perceiving the fairness of an event or entity. The use of policy capturing in these studies has provided an objective assessment of justice judgments, and in combination with representative design, has used quantified first-hand experiences of others to act as the external correlate to be judged.

8.2.1 Consistency in Justice Judgments

Overall the squared multiple correlations (R^2) for the Judges showed strong internal consistency in using the 10 cues to form an overall justice judgment. On average the 10 cues were explaining 86% of variance in the justice judgment in Study 1 (R^2 =.86) and 78% of variance in Study 2 (R^2 =.78). These values could be attributed to the use of a representative design and the thorough process by which the cues were selected and the use of realistic cue configurations representing the appraisal situations used by Judges.

The reliability checks for the two studies comprised of three repeated profiles situated at the end of the decision making task. Correlations between the first and second appearance of a

performance appraisal situation were used as a measure of consistency within-individuals across different situations. The average results show that individuals do demonstrate consistency in decision making across situations, with the average correlation between situations in Study 1 of r=0.68 and in Study 2 of r=0.58. This is important knowledge for practitioners of performance appraisals, as it implies that for most individuals the salience of individual antecedents can generalize across different situations, and so what an individual considers to promote feelings of (un)fairness about one appraisal may also be the case for future appraisals.

8.2.2 Self-insight in Justice Judgments

The results from the two studies indicated that individuals do possess poor levels of self-insight into their mental processes and how they form overall justice judgments. This finding is not at odds with existing literature (Slovic and Lichtenstein, 1971, Nisbett and Wilson, 1977, Hobson and Gibson, 1983, Reilly and Doherty, 1989, 1992, Carkenord and Stephens, 1994). However, the use of two subjective policy measures has interesting implications. The results from the two studies provide evidence that individuals believe that what they are reporting is how they truly believe they formed their decisions. The average correlation between the two subjective measures in Study 1 was r=0.72 and in Study 2 r=0.58, which is greater than those between the subjective and objective policies suggesting they are capturing the same thing. The average correlation between objective and subjective rated cues in Study 1 was r=0.18 and in Study 2 r=0.33, whilst between the objective and subjectively ranked cues the average correlation was r=0.16 in Study 1, and r=0.24 in Study 2. The low correlations found between the different measures could suggest that either individuals do not understand how they reach their overall decisions, or that their insight is being inaccurately measured by the researcher (Reilly and Doherty, 1989). Future attention should be directed towards the methods by which subjective policies are recorded in determining which are most accurate for conveying the subjective policies of individuals.

There was a minimal increase in the overall level of self insight for Judges using the Mouselab program rather than the paper booklet, when the same two subjective policies measures were used. This may be explained by the need for Judges using Mouselab to actively engage in information search and cue reveal before making a decision. In this way, Judges were required to almost pre-select those cues they thought would be useful, or should be viewed and

discounted during the judgment process. Nonetheless, the average self-insight for the two samples reached no higher than r=0.33 when objective policies were correlated with the subjective cue ratings in Study 2.

Justice researchers using any self-report style methodology, such as interviews, or surveys, must be cautious about the responses collected from participants. These two studies support a lack of self-insight demonstrated by individuals, and thus endorse triangulation of research methods, or the use of more objective measures, such as policy capturing or process tracing methods, in order that responses can be cross-checked and verified.

8.3 Implications for Researchers using Policy Capturing Methodologies

In the decision making field, policy capturing methodologies are a means of accessing the process of decision making, and as perceptions of justice are judgments based on stimuli about an event or entity, policy capturing lends itself to the field. In organizational justice research however, this methodology has been less prominent, and where it has been adopted it is done so using factorial cue configurations (Bretz Jr and Judge, 1994, Martocchio and Judge, 1995, Dineen et al., 2004).

The studies conducted in this thesis have demonstrated both the process of adopting a representative design and the benefits of doing so, for both justice researchers and those conducting policy capturing studies. Specifically, the external validity of results, and the ability to make generalizations, increases with the use of dual sampling and the need to collect stimuli which are naturally occurring and therefore a realistic representation of the situation being judged, the products being chosen, or the individual being selected for a position for example.

It is acknowledged that the design of a representative study requires additional costs (both financially and in terms of time), than a factorial, artificially constructed study, or for example, the distribution of questionnaires to employees in an organization to gain self-reported accounts of perceived overall fairness. In this piece of research it was necessary to have two additional participant samples before the actual decision makers judged the overall fairness of the appraisal situations. This was in order to firstly identify the relevant cues and second, to provide the situations to be judged. Furthermore the methodological choices adopted within this thesis are not without their limitations (addressed in chapters 5 and 7). This thesis does not claim that representative design is crucial, or indeed attainable, for all research, or that it is an easy

feat. However, when the purpose of research is to understand the behavior of individuals and how they interact and behave in their natural environment, the need to adequately sample that environment becomes imperative to make generalizations from results and propose implications for practice.

8.4 Implications for Practitioners

If appraisers of performance appraisals can understand those antecedents which are most likely to lead to perceptions of unfairness then they will be better equipped at reducing the likelihood of a perceived unfair assessment.

The results of these studies demonstrate that what is perceived as fair by one individual could be deemed unfair by another. That perceptions of overall fairness of an event can be so diverse may be burdensome for managers, and in this case those who conduct performance appraisals. Whilst demanding further research, this finding in itself is valuable. There is no set of common antecedents which can promote, or ensure, perceptions of a fair performance appraisal; however, there are antecedents which are more salient than others. For practitioners, when conducting a performance appraisal to be perceived as fair, they must engage in high levels of fair outcomes, procedures and treatments. But, most importantly appraisers should be concerned that the outcome reflects the quality of work done by an employee, and also that procedures are enacted accurately and fairly, such as giving the opportunity for voice during the appraisal and also basing the appraisal on accurate information.

The results further suggest that perceptions of overall fairness about performance appraisals are not contingent upon an individual's general attitudes about their employers. Whether an individual likes working for their employer or not, the importance of distributively, procedurally, and informationally fair justice antecedents is more important to an overall perception of appraisal fairness.

That overall justice judgments are subjective is nothing new (Lind and Tyler, 1988, Cropanzano and Greenberg, 1997), but these studies have confirmed that the judgment process itself differs between individuals. Firstly, even when the antecedents are held constant individual Judges differ in their rating of overall fairness for one performance appraisal experience. Secondly, Judges differ in how they weigh and use the available antecedents in forming their

overall judgments. When making overall assessments based on the same stimuli, individual perceptions of acceptable outcomes and treatments vary.

The attempts made in this thesis to conduct studies using a representative design should be useful for managers who implement the practical suggestions made by academic researchers. The vast majority of research, which does not employ dual sampling, provides results that are situation and contextually specific, and moreover, which may be based on situations that are not representative of the real world. In contrast, these studies are based on realistic cue configurations and also explicitly take into account the boundaries of the context used and generalizations made. Managers can benefit not only from considering the practical results of academic research, but also through a greater understanding of the methodological choices used by researchers, in order to evaluate the practicalities of applying such research to their organizations.

8.5 Future Directions for Representative Design

Justice researchers wishing to conduct research which samples both the participants and the situations can benefit from the use of Experience Sampling Methods (ESM). In this way, modern technology is employed in order to assist the researcher in sampling participant's thoughts, behaviors and reactions at random intervals and encompassing a multitude of situations which they may experience in the course of a day, week or month. Experience Sampling Methods can be used to create a randomised data collection tool for "collecting information about both the context and content of the daily lives of individuals" (Hektner *et al.*, 2007; 6). Representative design can be enhanced through experience sampling methods as it "combines the ecological validity of naturalistic behavioral observations with the nonintrusive nature of diaries and the precision of scaled questionnaire measures" (Hektner *et al.*, 2007; 7).

Representative design has the ability to enhance the applicability of research not solely in organizational justice but in organizational behaviour research more generally. As a first step, researchers should be more willing to acknowledge limitations with the situation in which research is conducted, alongside the shortcomings of their participants which is already frequently addressed in the limitation sections of published research. Should researchers explicitly pay more attention to their situation sampling, alongside participant sampling, then Brunswik's representative design may play a more prominent role in research of the future.

8.6 Future Directions for Policy Capturing Research

In the future, researchers using policy capturing methods should concern themselves not solely with the collection of an individual's subjective policy, but with how they measure the subjective policy. As previously discussed (section 8.2.2) some of the variance between objective and subjective policies may be due to the manner in which subjective responses are collected rather than a lack of self-insight.

Aiman-Smith *et al.* (2002) state that the biggest drawback of policy capturing is that they are likely to lack realism or be based on hypothetical paper-people or situations. Whilst it is not possible to include all possible antecedents in any one study, the representativeness of the chosen antecedents (cues) can, through a representative design which first identifies a sample of salient cues and then presents them in natural configurations, present cues which are likely to be most salient for a given situation, for the sample of participants. In this way the external validity of a study is increased and objective inferences can be made about how the cues are utilized in making a judgment.

8.7 Future Directions for Organizational Justice Research

The support for unequal weights of antecedents in the overall justice judgment of an event has paved the way for future research in this area. This thesis has used the fairness perceptions of performance appraisals as the context in which to explore justice judgments, and a natural next step would be to explore the judgment process in other contexts. In doing so, valuable knowledge can be gained into the justice judgment process and the salience of individual antecedents across contexts.

Adhering to representative design and thus ensuring high external validity of the antecedents used for the participants in each context may mean that the salience of antecedents and the justice dimensions differ between contexts, as demonstrated by the existing research on overall justice judgments of entities (Kim and Leung, 2007, Ambrose and Schminke, 2009, Jones and Martens, 2009, Holtz and Harold, 2009). Using a representative design it would be possible to determine overall justice policies both within- and between-individuals, to explore whether the same antecedents are important for individuals in different contexts, or whether each context promotes unique within-individual policies. Cultural differences may also be a significant factor in determining the salience of individual antecedents.

In these studies cognitive ability is measured using a three-item cognitive reflection test. It has been shown that there is a moderate significant correlation between the CRT test scores and measures of intelligence (see Frederick, 2005), however, there are other factors of intelligence which may explain decision processes and can be included in future research. Measures of general intelligence (*g*) such as memory, mathematical skill, verbal fluency and spatial visualization may demonstrate differences in decision processes demonstrated by Judges. Nonetheless it should be noted that Spearman (1904), who first identified general intelligence, found that those who performed well on one test are likely to perform well generally across different tests.

The effect of memory may be particularly salient in this research's design and the use of process tracing techniques and thus demands future attention. The nature of process tracing is that cues are viewed sequentially and therefore there is some reliance on the memory of each Judge whilst comprising an overall fairness judgment for each situation. Consequently, memory is likely to impact upon decision processes including the rate of cue reacquisition, the time spent revealing individual cues, and ultimately the weight of cues viewed first or last.

Future research could also include other variables which may be expected to affect the salience of individual antecedents and also to control for variables such as previous experiences of performance appraisals and relationship with the appraiser. Other individual differences which may impact upon the ability to process overall justice judgments could be participant's mood or individual preferences, and even learning and processing abilities may affect how individuals form overall justice judgments, and these offer an opportunity for future research and insight into the judgment process.

The use of a policy capturing design lends itself to gain deeper insight into the effect of learning on justice judgments. That is, do individuals learn as they make a series of judgments in sequence, and how quickly are individual's policies formed? Future research can use a policy capturing design to separate the policies of Judges as they proceed through the profile set, i.e., after the first 10 judgments, after 25 judgments and after judgment of the full 56 profiles. Comparison of policies using this design would provide an insight into a) how soon individual's policies are set, and b) the role of learning in judgment making, and c) whether the formation of justice judgments speeds up due to practice effects (e.g., whether the time spent on forming an overall justice judgment later in the profile set is less than that earlier in the profile set). The

current research controlled for start-up and practice effects by including two start-up practice profiles to introduce the Judge to the task, cues and procedures, which were then omitted before analysis. However, it does not explore judgment processes over time (albeit time elapses as the Judges make a series of sequential judgments). Consideration of learning and practice in decision making can contribute to the justice literature, as we still know little about how justice judgments are formed or change over time (Ancona *et al.*, 2001, Ambrose and Cropanzano, 2003, Rupp and Paddock, 2010).

It would also be interesting to consider the judgment policies (relative cue weights) used by Judges when interpersonal justice does not have minimal variance, as occurred through the collection of naturally occurring cue configurations from the Raters. A research design which includes variance across each of the justice dimensions will assist in understanding the salience individuals assign to interpersonal justice cues when forming overall justice judgments. Here, the focus of future research would be on using policy capturing designs to understand judgment policies, rather than adhering to a representative design.

The cue configurations used in this study were naturally developed from the reflections of a sample of individuals who experienced the performance appraisal process (the Raters) and this resulted in low variance for interpersonal justice cues. These studies have not determined whether this is a factor solely of this sample or of performance appraisals more generally. Future studies should replicate the policy capturing design used here for a different sample of performance appraisal experiences in order to establish whether the salience of interpersonal justice cues is negligible to this context or this sample. It may be that in organizations whose human resource policies are less formalized the interpersonal justice antecedents become more salient. Furthermore, their salience may be associated with the individual appraiser and the relationship between appraisee (who reflects on their experience) and the appraiser, which may be explained in part by the culture and organizational climate in which the appraisal is conducted.

8.8 Final Comments

These two studies are the first to explore the relative importance of individual justice antecedents, whilst concurrently adhering to a representative design. In addition this research has employed underutilized methodologies in the field, which permit an objective within-individual

analysis of the justice judgment process, and also identifies differences between-individuals in forming perceptions of overall justice.

Surprisingly the individual personality measures included in Study 2 were not able to explain much about the differences between groups of individuals and how they form overall justice judgments. However, within-individual analysis has clearly illustrated how judgment policies differed between individuals.

The study design and methodology used has responded to some of the weaknesses of existing justice research. Specifically, that justice research is concerned with single situations and stimuli, undesirable events, and often conducted in non-organizational settings (Greenberg, 1990b). The nature of policy capturing is that multiple events, or situations, are used in order to infer an individual's judgment policy, and therefore a more rounded and deeper insight into fairness perceptions is achieved when compared to conducting a survey about the fairness of one event for example.

Through representative design this research has sampled not only the participants as exhibited in other empirical research, but has sampled the situation and its stimuli concurrently. In doing so, the results of these studies are a representative insight into the decision making policies and processes used by individuals in the real world, and into the relative importance of individual justice antecedents.

The use of representative design in organizational justice research, in combination with methodologies which delve within the "black-box" of decision making processes, pose exciting areas for future research which have the potential to enhance research and make valuable contributions to practice.

Bibliography

Adams, J. S. (1965) *Inequity in Social Exchange*. IN Berkowitz, L. (Ed.) **Advances in experimental social psychology**. New York, Academic Press.

Aiman-Smith, L., Scullen, S. E. & Barr, S. H. (2002) *Conducting Studies of Decision Making in Organizational Contexts: A Tutorial for Policy-Capturing and Other Regression-Based Techniques*. **Organizational Research Methods**, 5**,** 388-414.

Albright, L. & Malloy, T. E. (2000) *Experimental Validity: Brunswik, Campbell, Cronbach, and Enduring Issues*. **Review of General Psychology**, 4**,** 337-353.

Albright, L. & Malloy, T. E. (2001) *Brunswik's Theoretical and Methodological Contributions to Research in Interpersonal Perception*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Ambrose, M. (2002) *Contemporary Justice Research: A New Look at Familiar Questions*. **Organizational Behavior and Human Decision Processes**, 89**,** 803-812.

Ambrose, M. & Arnaud, A. (2005) *Are Procedural Justice and Distributive Justice Conceptually Distinct?* IN Greenberg, J. & Colquitt, J. A. (Eds.) **Handbook of Organizational Justice**. Mahwah, NJ, Lawrence Erlbaum.

Ambrose, M., Hess, R. L. & Ganesan, S. (2007) *The relationship between justice and attitudes: An examination of justice effects on event and system-related attitudes*. **Organizational Behavior and Human Decision Processes**, 103**,** 21-36.

Ambrose, M. & Schminke, M. (2009) *The Role of Overall Justice Judgments in Organizational Justice Research: A Test of Mediation*. **Journal of Applied Psychology**, 94**,** 491-500.

Ambrose, M. L. & Cropanzano, R. (2003) *A Longitudinal Analysis of Organizational Fairness: An Examination of Reactions to Tenure and Promotion Decisions.* **Journal of Applied Psychology**, 88**,** 266-275.

Ambrose, M. L. & Kulik, C. T. (2001) *How do I know what's fair? A categorization approach to fairness judgements.* IN Gilliland, S. W., Steiner, D. D. & Skarlicki, D. P. (Eds.) **Theoretical and cultural perspectives on organizational justice**. Greenwich, Information Age Publishing.

Ancona, D., Goodman, P., Lawrence, B. & Tushman, M. (2001) *Time: A new research lens*. **Academy of Management Review**, 26**,** 645-663.

Anderson, B. L. (1977) *Differences in Teachers' Judgment Policies for Varying Numbers of Verbal and Numerical Cues*. **Organizational Behavior and Human Decision Processes**, 19**,** 68-88.

Andersson, P. (2004) *Does Experience Matter in Lending? A Process-Tracing Study on Experienced Loan Officers' and Novices Decision Behavior*. **Journal of Economic Psychology**, 25**,** 471-492.

Arch, D. C., Bettman, J. R. & Kakkar, P. (1978) *Subjects' Information Processing in Information Display Board Studies*. **Advances in Consumer Research**, 5**,** 555-560.

Arnold, H. J. & Feldman, D. C. (1981) *Social Desirability Response Bias in Self-Report Choice Situations*. **Academy of Management Journal**, 24**,** 377-385.

Athanasou, J. A. (1998) *Perceptions of Interest: A Lens Model Analysis*. **Australian Psychology**, 33**,** 223-227.

Athanasou, J. A. & Aiyewalehinmi, E. O. (2007) *Repeated Judgements Of Educational interest*. **International Journal for Educational and Vocational Guidance**, 7**,** 47-57.

Barrick, M. R. & Mount, M. K. (1993) *Autonomy as a moderator of the relationship between the big five personality dimensions and job performance*. **Journal of Applied Psychology**, 78**,** 111-118.

Beach, L. R. & Mitchell, T. R. (1978) *A Contingency Model for the Selection of Decision Strategies* **Academy of Management Review**, 3**,** 439-449.

Berkowitz, L. & Donnerstein, E. (1982) *External Validity Is More Than Skin Deep. Some Answers to Criticisms of Laboratory Experiments*. **American Psychologist**, 37**,** 245-257.

Bettman, J. R., Johnson, E., J. & Payne, J. W. (1990) *A Componential Analysis of Cognitive Effort in Choice*. **Organizational Behavior and Human Decision Processes**, 45**,** 111-139.

Bettman, J. R. & Park, C. W. (1980) *Effects of Prior Knowledge and Experience and Phase of the Choice Process on Consumer Decision Processes: A Protocol Analysis*. **Journal of Consumer Research**, 7.

Bies, R. J. (1986) *Identifying principles of interactional justice: The case of corporate recruiting.* IN Bies, R. J. C. (Ed. *Moving beyond equity theory: New directions in research on justice in organizations.* Symposium at the Annual Meeting of the Academy of Management, Chicago IL.

Bies, R. J. (1987) *The predicament of injustice: The management of moral outrage*. IN Cummings, L. L. & Staw, B. M. (Eds.) **Research in Organizational Behavior**. Greenwich, CT, JAI.

Bies, R. J. (2001) *Interactional (in)justice: The sacred and the profane.* . IN Greenberg, J. & Cropanzano, R. (Eds.) **Advances in Organizational Justice**. San Francisco, Stanford University Press.

Bies, R. J. (2005) *Are Procedural Justice and Interactional Justice Conceptually Distinct?* IN Greenberg, J. & Colquitt, J. A. (Eds.) **Handbook of Organizational Justice**. Mahwayh, NJ, Lawrence Erlbaum.

Bies, R. J. & Moag, J. (1986) *Interactional Justice: Communication criteria of fairness*. IN Lewicki, R., Sheppard, B. & Bazerman, M. (Eds.) **Research on Negotiation in Organizations**. Greenwich, JAI Press.

Bies, R. J. & Tripp, T. M. (2001) *A Passion for Justice: The Rationality and Morality of Revenge*. IN Cropanzano, R. (Ed.) **Justice in the Workplace: From Theory to Practice**. Mahwah, NJ, Lawrence Erlbaum.

Billings, R. S. & Marcus, S. A. (1983) *Measures of Compensatory and Noncompensatory Models of Decision Behavior: Process Tracing versus Policy Capturing*. **Organizational Behavior and Human Performance**, 31**,** 331-352.

Billings, R. S. & Scherer, L. L. (1988) *The effects of response mode and importance on decision-making strategies: Judgment versus choice*. **Organizational Behavior and Human Decision Processes**, 41**,** 1-19.

Blader, S. & Tyler, T. R. (2003) *What constitutes fairness in work settings? A four-component model of procedural justice*. **Human Resource Management Review**, 13**,** 107-126.

Blancero, D. M., DelCampo, R. G. & Marron, G. R. (2010) *Just Tell Me! Making Alternative Dispute Resolution Systems Fair*. **Industrial Relations**, 49**,** 524-543.

Blumberg, B., Cooper, D. & Schindler, P. S. (2005) *Business Research Methods,* Berkshire, McGraw-Hill Education.

Bobocel, D. R. & Zdaniuk, A. (2005) *How can explanations be used to foster organizational justice?* IN Greenberg, J. & Colquitt, J. A. (Eds.) **Handbook of Organizational Justice**. New York, NY, Lawrence Erlbaum.

Bouskila-Yam, O. & Kluger, A. N. (2011) *Strength-based performance appraisal and goal setting*. **Human Resource Management Review**, 21**,** 137-147.

Brannick, M. T. & Brannick, J. P. (1989) *Nonlinear and Noncompensatory Processes in Performance Evaluation*. **Organizational Behavior and Human Decision Processes**, 44**,** 97-122.

Brehmer, A. & Brehmer, B. (1988) *What have we Learned about Human Judgment from Thirty Years of Policy Capturing?* IN Brehmer, B. & Joyce, C. R. B. (Eds.) *Human Judgment: The SJT View*
North-Holland, Elsevier Science Publishers B.V.

Bretz Jr, R. D. & Judge, T. A. (1994) *The Role of Human Resource Systems in Job Applicant Decision Processes*. **Journal of Management**, 20**,** 531-551.

Brockner, J. & Wiesenfeld, B. M. (1996) *An integrative framework for explaining reactions to decision: Interactive effects of outcomes and procedures.* **Psychological Bulletin**, 120**,** 189-208.

Brunswik, E. (1949) *Systematic and Representative Design of Psychological Experiments*. *Berkeley Symposium on Mathematical Statistics and Probability.* University of California, Berkeley, University of California, Press.

Brunswik, E. (2001 [1944]) *Distal Focussing of Perception; Size Constancy in a Representative Sample of Situations* IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Brunswik, E. (2001 [1955]) *Representative Design and Probabilistic Theory in a Functional Psychology*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Burisch, M. (1984) *Approaches to personality inventory construction*. **American Psychologist**, 39.

Byrne, Z. S. & Cropanzano, R. (2001) *The History of Organizational Justice: The Founders Speak*. IN Cropanzano, R. (Ed.) **Justice in the Workplace: From Theory to Practice**. Mahwah, New Jersey, Lawrence Erlbaum Associates.

Cable, D. M. & Judge, T. A. (1994) *Pay Preferences and Job Search Decisions: A Person-Organization Fit Perspective*. **Personnel Psychology**, 47**,** 317-348.

Capon, N. & Davis, R. (1984) *Basic Cognitive Ability Meaures as Predictors of Consumer Information Processing Strategies*. **Journal of Consumer Research**, 11.

Carkenord, D. M. & Stephens, M. G. (1994) *Understanding Student Judgments of Teaching Effectiveness: A "Policy Capturing" Approach*. **Journal of Psychology**, 128**,** 675-682.

Castellan, N. J. (1973) *Comments On The "Lens Model" Equation And The Analysis of Multiple-Cue Judgment Tasks*. **Psychometrika**, 38.

Cawley, B. D., Keeping, L. M. & Levy, P. E. (1998) *Participation in the Performance Appraisal Process and Employee Reactions: A Meta-Analytic Review of Field Investigations*. **Journal of Applied Psychology**, 83**,** 615-633.

Cohen-Charash, Y. & Spector, P. E. (2001) *The Role of Justice in Organizations: A Meta-Analysis*. **Organizational Behavior and Human Decision Processes**, 86**,** 278-321.

Colquitt, J. A. (2001) *On the Dimensionality of Organizational Justice: A Construct Validation of a Measure*. **Journal of Applied Psychology**, 86**,** 386-400.

Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O. & Ng, K. Y. (2001) *Justice at the millennium: A meta-analytic review of 25 years of organizational justice research*. **Journal of Applied Psychology**, 86**,** 425-445.

Colquitt, J. A. & Greenberg, J. (2003) *Organizational Justice: A Fair Assessment of the State of the Literature*. IN Greenberg, J. (Ed.) **Organizational Behavior: The State of the Science**. 2nd ed. London, Lawrence Erlbaum Associations.

Colquitt, J. A., Greenberg, J. & Zapata-Phelan, C. P. (2005) *What is Organizational Justice? A historical Overview*. IN Greenberg, J. & Colquitt, J. A. (Eds.) **Handbook of Organizational Justice**. Mahwah, NJ, Lawrence Erlbaum.

Colquitt, J. A., Scott, B. A., Judge, T. A. & Shaw, J. C. (2006) *Justice and personality: Using integrative theories to derive moderators of justice effects*. **Organizational Behavior and Human Decision Processes**, 100**,** 110-127.

Colquitt, J. A. & Shaw, J. C. (2005) *How Should Organizational Justice Be Measured?* IN Greenberg, J. & Colquitt, J. A. (Eds.) **Handbook of Organizational Justice** Mahwah, NJ, Lawrence Erlbaum.

Conlon, D. E., Meyer, C. J. & Nowakowski, J. M. (2005) *How Does Organizational Justice Affect Performance, Withdrawal, and Counterproductive Behavior?* IN Greenberg, J. & Colquitt, J. A. (Eds.) **Handbook of Organizational Justice**. Mahwah, NJ, Lawrence Erlbaum.

Cook, G. J. & Swain, M. R. (1993) *A Computerized Approach to Decision Process Tracing for Decision Support System Design*. **Decision Sciences**, 24**,** 931-952.

Cooksey, R. W. (1996a) *Judgement Analysis: Theory, Methods and Applications*, London, Academic Press.

Cooksey, R. W. (1996b) *The Methodology of Social Judgement Theory*. **Thinking and Reasoning**, 2**,** 141-173.

Cooksey, R. W. (1998) *Comments On The Distinction Between "Policy Capturing" And "Judgment Analysis"*, **The Brunswik Society,** September, http://www.brunswik.org/notes/japc.html, Accessed: 10 February 2010

Cooksey, R. W. (2001) *COMMENT: Brunswik's The Conceptual Framework of Psychology: Then and Now*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Covey, J. A. & Lovie, A. D. (1998) *Information Selection and Utilization in Hypothesis Testing: A Comparison of Process-Tracing and Structural Analysis Techniques*. **Organizational Behavior and Human Decision Processes**, 75**,** 56-74.

Cropanzano, R. & Ambrose, M. L. (2001) *Procedural and Distributive Justice Are More Similar than You Think: A Monistic Perspective and a Research Agenda*. IN Greenberg, J. & Cropanzano, R. (Eds.) **Advances in Organizational Justice**. Stanford, California, Stanford University Press.

Cropanzano, R., Byrne, Z. S., Bobocel, R. & Rupp, D. (2001a) *Moral Virtues, Fairness Heuristics, Social Entities and Other Denizens of Organizational Justice*. **Journal of Vocational Behavior**, 58**,** 164-209.

Cropanzano, R. & Greenberg, J. (1997) *Progress in Organizational Justice: Tunneling Through the Maze*. IN Cooper, C. L. & Robertson, I. T. (Eds.) **International Review of Industrial and Organizational Psychology**. New York, Wiley.

Cropanzano, R., Rupp, D. E., Mohler, C. J. & Schminke, M. (2001b) *Three Roads to Organizational Jusice*. **Research in Personnel and Human Resources Management**, 20**,** 1-113.

Crow, W. J. (1957) *The Need for Representative Design in Studies of Intepersonal Perception*. **Journal of Consulting Psychology**, 21**,** 323-325.

Dalal, R. S. & Bonaccio, S. (2009) *What Types of Advice do Decision-Makers Prefer?* **Organizational Behavior and Human Decision Processes**.

DeCremer, D. (2005) *Procedural and Distributive Justice Effects Moderated by Organizational Identification*. **Journal of Management Psychology**, 20**,** 4-13.

DeCremer, D. & Blader, S. L. (2006) *Why do people care about procedural fairness? The importance of belongingness in responding and attending to procedures.* **European Journal of Social Psychology**, 36**,** 211-228.

Deutsch, M. (1975) *Equity, equality, and need: What determines which value will be used as the basis for distributive justice?* **Journal of Social Issues**, 31**,** 137-149.

Dhami, M. K., Hertwig, R. & Hoffrage, U. (2004) *The Role of Representative Design in an Ecological Approach to Cognition*. **Psychological Bulletin**, 130**,** 959-988.

Dineen, B. R., Noe, R. A. & Wang, C. (2004) *Perceived Fairness of Web-Based Applicant Screening Procedures: Weighing the Rules of Justice and the Role of Individual Differences*. **Human Resource Managment**, 43**,** 127-145.

Dipboye, R. L. & Pontbriand, R. d. (1981) *Correlates of Employee Reactions to Performance Appraisals and Appraisal Systems*. **Journal of Applied Psychology**, 66**,** 248-251.

Doherty, M. E. & Kurz, E. M. (1996) *Social Judgement Theory*. **Thinking and Reasoning**, 2/3**,** 109-140.

Dougherty, T. W., Ebert, R. J. & Callender, J. C. (1986) *Policy Capturing in the Employment Interview*. **Journal of Applied Psychology**, 71**,** 9-15.

Dulebohn, J. H. & Ferris, G. R. (1999) *The Role of Influence Tactics in Perceptions of Performance Evaluations' Fairness*. **Academy of Management Journal**, 42**,** 288-303.

Dulebohn, J. H. & Martocchio, J. J. (1998) *Employees' Perceptions of the Distributive Justice of Pay Raise Decisions: A Policy Capturing Approach*. **Journal of Business and Psychology**, 13**,** 41-64.

Edwards, J. R. (2001) *Multidimensional Constructs in Organizational Behavior Research: An Integrative Analytical Framework* **Organizational Research Methods**, 4.

Einhorn, H. J., Kleinmuntz, D. N. & Kleinmuntz, B. (1979) *Linear Regression and Process-Tracing Models of Judgment*. **Psychological Review**, 86**,** 465-485.

Einhorn, R. J. & Hogarth, R. M. (1981) *Behavioural Decision Theory: Processes of Judgment and Choice*. **Annual Review of Psychology**, 32**,** 53-88.

Erdogan, B. (2002) *Antecedents and consequences of justice perceptions in performance appraisals.* **Human Resource Management**, 12**,** 555-578.

Fassina, N. E., Jones, D. A. & Uggerslev, K. L. (2008) *Meta-Analytic Tests of Relationships Between Organizational Justice and Citizenship Behavior: Testing Agent-System and Shared-Variance Models.* **Journal of Organizational Behavior**, 29**,** 805-828.

Feldman, D. C. & Arnold, H. J. (1978) *Position Choice: Comparing the Importance of Organizational and Job Factors*. **Journal of Applied Psychology**, 63**,** 706-710.

Folger, R. (1998) *Fairness as a moral virtue.* IN Schminke, M. (Ed.) **Managerial Ethics: Moral management of people and processes**. Mahwah, NJ, Erlbaum.

Folger, R. & Cropanzano, R. (1998) *Organizational Justice and Human Resource Management*, London, Sage Publications.

Folger, R. & Konovsky, M. A. (1989) *Effects of Procedural and Distributive Justice on Reactions to Pay Raise Decisions*. **Academy of Management Journal**, 32**,** 115-130.

Folger, R., Konovsky, M. A. & Cropanzano, R. (1992) *A due process metaphor for performance appraisal*. IN Staw, B. M. & Cummings, L. L. (Eds.) **Research in organizational behavior**. Greenwich, CT, JAI.

Ford, J. K., Schmitt, N., Schechtman, S. L., Hults, B. M. & Doherty, M. L. (1989) *Process tracing methods: Contributions, problems, and neglected research questions*. **Organizational Behavior and Human Decision Processes**, 43**,** 75-117.

Fortin, M. (2008) *Perspectives on organizational justice: Concept clarification, social context integration, time and links with morality*. **International Journal of Management Reviews**, 10**,** 1 - 34.

Frederick, S. (2005) *Cognitive Reflection and Decision Making*. **Journal of Economic Perspectives**, 19**,** 25-42.

Funder, D. C. (2001) *The Realistic Accuracy Model and Brunswik's Approach to Social Judgment*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Gellatly, I. R. (1996) *Conscientiousness and task performance: Test of a cognitive process model*. **Journal of Applied Psychology**, 81**,** 474-482.

Gilliland, S. W., Benson, I., L. & Schepers, D. H. (1998) *A Rejection Threshold in Justice. Evaluations: Effects on Judgment and Decision-Making*. **Organizational Behavior and Human Decision Processes**, 6**,** 113-131.

Gillis, J. S., Bernieri, F. J. & Wooten, E. (1995) *The Effects of Stimulus Medium and Feedback on the Judgment of Rapport*. **Organizational Behavior and Human Decision Processes**, 63**,** 33-45.

Glockner, A. & Batsch, T. (2008) *Multiple-Reason Decision Making Based on Automatic Processing*. **Journal of Experimental Psychology: Learning, Memory, and Cognition**, 34**,** 1055-1075.

Goldberg, L. R. (1993) *The structure of phenotypic personality traits*. **American Psychologist**, 48**,** 26-34.

Gorman, C. D., Clover, W. H. & Doherty, M. E. (1978) *Can We Learn Anything About Interviewing Real People From "Interviews" of Paper People? Two Studies of the External Validity of a Paradigm*. **Organizational Behavior and Human Decision Processes**, 22**,** 165-192.

Graziano, W. G. & Tobin, R. M. (1999) *Agreeableness*. IN Leary, M. R. & Hoyle, R. H. (Eds.) **Handbook of Individual Differences in Social Behavior** New York, The Guildford Press.

Greenberg, J. (1987) *A Taxonomy of Organizational Justice Theories*. **Academy of Management Review**, 12**,** 9-22.

Greenberg, J. (1990a) *Employee theft as a reaction to underpayment inequity: The hidden cost of pay cuts*. **Journal of Applied Psychology**, 75**,** 561-568.

Greenberg, J. (1990b) *Organizational justice: Yesterday, today, and tomorrow*. **Journal of Management**, 16**,** 399-432.

Greenberg, J. (1993a) *The intellectual adolescence of organizational justice: You've come a long way, maybe*. **Social Justice Research**, 6**,** 135-148.

Greenberg, J. (1993b) *The social side of fairness: Interpersonal and informational classes of organizational justice*. IN Cropanzano, R. (Ed.) **Justice in the workplae: Approaching fairness in human resource management**. Hillsdale, NJ, Erlbaum.

Greenberg, J. (1993c) *Stealing in the Name of Justice: Informational and Interpersonal Moderators of Theft Reactions to Underpayment Inequity*. **Organizational Behavior and Human Decision Processes**, 54**,** 81-103.

Greenberg, J. (2001) *Setting the Justice Agenda: Seven Unanswered Questions about "What, Why and How"*. **Journal of Vocational Behavior**, 58**,** 210-219.

Hammond, K. R. (1948) *Subject and Object Sampling - A Note*. **Psychological Bulletin**, 45**,** 530-533.

Hammond, K. R. (1955) *Probabilistic Functioning and the Clinical Method*. **Psychological Review**, 62**,** 255-262.

Hammond, K. R. (1996) *Upon Reflection*. **Thinking and Reasoning**, 2**,** 239-248.

Hammond, K. R. (1998a) *Brunswik's Challenge*, **The Brunswik Society,** http://www.brunswik.org/notes/essay1.html,

Hammond, K. R. (1998b) *Brunswik's Challenge*, **The Brunswik Society,** September, http://www.brunswik.org/notes/essay1.html, Accessed: 10 February 2010

Hammond, K. R. (1998c) *Ecological Validity: Then and Now*, **The Brunswik Society,** September, http://www.brunswik.org/notes/essay2.html, Accessed: 10 February 2010

Hammond, K. R. (1998d) *Representative Design*, **The Brunswik Society,** September, http://www.brunswik.org/notes/essay3.html, Accessed: 10 February 2010

Hammond, K. R. (2001a) *COMMENT: Representative Design in Action in the Middle of the Twentieth Century*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Hammond, K. R. (2001b) *COMMENT: Thinking about Error and Errors about Thinking*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Hammond, K. R. (2001c) *Expansion of Egon Brunswik's Psychology, 1955-1995*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Hammond, K. R., Hamm, R. M. & Grassia, J. (1986) *Generalizing Over Conditions by Combining the Multitrait-Multimethod Matrix and the Representative Design of Experiments*. **Psychological Bulletin**, 100**,** 257-269.

Hammond, K. R. & Stewart, T. R. (2001a) IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, Oxford University Press.

Hammond, K. R. & Stewart, T. R. (2001b) *Introduction*. IN Hammond, K. R. & Stewart, T. R. (Eds.) **The Essential Brunswik: Beginnings, Explications, Applications**. Oxford, University Press.

Hammond, K. R. & Summers, D. A. (1972) *Cognitive Control*. **Psychological Review**, 79**,** 58-67.

Hektner, J. M., Schmidt, J. A. & Csikszentmihalyi, M. (2007) *Experience Sampling Method. Measuring the Quality of Everyday Life*, London, Sage Publications.

Hemingway, M. A. & Conte, J. M. (2003) *The Perceived Fairness of Layoff Practices*. **Journal of Applied Psychology**, 33**,** 1588-1617.

Heslin, P. A. & VandeWalle, D. (2009) *Performance Appraisal Procedural Justice: The role of a Manager's Implicit Person Theory*. **Journal of Management**.

Hobson, C. J. & Gibson, F. W. (1983) *Policy Capturing as an Approach to Understanding and Improving Performance Appraisal: A Review of the Literature*. **Academy of Management Review**, 8**,** 640-649.

Hobson, C. J., Mendel, R. M. & Gibson, F. W. (1981) *Clarifying Performance Appraisal Criteria*. **Organizational Behavior and Human Decision Processes**, 28**,** 164-188.

Hoffman, P. J. (1960) *The Paramorphic Representation of Clinical Judgment*. **Psychological Bulletin**, 57**,** 116-131.

Hogarth, R. (2005) *The Challenge of Representative Design in Psychology and Economics*. **Journal of Economic Methodology**, 12**,** 257-269.

Holbrook, M. B. & Maier, K. A. (1978) *A Study of the Interface Between Attitude Structure and Information Acquisition Using a Questionnaire-Based Information Display Sheet*. **Advances in Consumer Research**, 5.

Hollensbe, E. C., Khazanchi, S. & Masterson, S. S. (2008) *How Do I Assess if my Supervisor and Organization Are Fair?: Identifying the Rules Underlying Entity-Based Justice Perceptions*. **Academy of Management Journal**, 51**,** 1099-1116.

Holtz, B. C. & Harold, C. M. (2009) *Fair Today, Fair Tomorrow? A Longitudinal Investigation of Overall Justice Perceptions*. **Journal of Applied Psychology**, 94**,** 1185-1199.

Hursch, C., Hammond, K. R. & Hursch, J. L. (1964) *Some Methodological Considerations in Multiple-Cue Probability Studies*. **Psychological Review**, 71**,** 42-60.

Jacoby, J., Jaccard, J., Kuss, A., Troutman, T. & Mazursky, D. (1987) *New Directions in Behavioral Process Research: Implications for Social Psychology*. **Journal of Experimental Social Psychology**, 23**,** 146-175.

Jasper, J. D. & Shapiro, J. (2002) *A Better Mousetrap For Catching Decision Processes*. **Behavior Research Methods, Instruments, & Computers**, 34**,** 364-374.

John, O. P. & Srivastava, S. (1999) *The Big-Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives*. University of California at Berkeley.

Jones, D. A. & Martens, M. L. (2009) *The Mediating Role of Overall Fairness and the Moderating Role of Trust Certainty in Justice-Criteria Relationships: The Formation and Use of Fairness Heuristics in the Workplace*. **Journal of Organizational Behavior**, 30**,** 1025-1051.

Judge, T. A. & Bretz, R. D. (1992) *Effects of Work Values on Job Choice Decisions*. **Journal of Applied Psychology**, 77**,** 261-271.

Kadous, K. (1996) *Discussion of Measuring Cognitive Effort During Analytical Review: A Process-Tracing Framework with Experimental Results*. **Auditing: A Journal of Practice and Theory**, 15.

Karren, R. J. & Barringer, M. W. (2002) *A Review and Analysis of the Policy-Capturing Methodology in Organizational Research: Guidelines for Research and Practice*. **Organizational Research Methods**, 5**,** 337-361.

Kim, T.-Y. & Leung, K. (2007) *Forming and reacting to overall fairness: A cross-cultural comparison*. **Organizational Behavior and Human Decision Processes**, in press.

Konovsky, M. A. (2000) *Understanding procedural justice and its impact on business organizations*. **Journal of Management**, 26.

Landy, F. J., Barnes, J. L. & Murphy, K. R. (1978) *Correlates of Perceived Fairness and Accuracy of Performance Evaluation*. **Journal of Applied Psychology**, 63**,** 751-754.

Lane, D. M. (2007) *Fisher's Z'*, http://davidmlane.com/hyperstat/A50760.html, 23rd September 2010

Lane, D. M., Murphy, K. R. & Marques, T. E. (1982) *Measuring the Importance of Cues in Policy Capturing*. **Organizational Behavior and Human Decision Processes**, 30**,** 231-240.

Larcker, D. F. & Lessig, V. P. (1983) *An Examination of the Linear and Retrospective Process Tracing Approach to Judgment Modelling*. **The Accounting Review**, LV111.

Lehmann, D. R. & Moore, W. L. (1980) *Validity of Information Display Boards: An Assessment Using Longitudinal Data*. **Journal of Marketing Research**, 17**,** 450-459.

Leventhal, G. S. (1976) *The distribution of rewards and resources in groups and organizations.* IN Berkowithz, L. & Walster, E. (Eds.) **Advances in experimental social psychology**. New York, Academic Press.

Leventhal, G. S. (1980) *What should be done with equity theory?* IN Gergen, K. J., Greenberg, M. S. & Willis, R. H. (Eds.) **Social exchanges: Advances in Theory and Research**. New York, Plenum.

Leventhal, G. S., Karuza, J. & Fry, W. R. (1980) *Beyond Fairness: A theory of allocation preferences.* IN Mikula, G. (Ed.) **Justice and social interaction**. New York, Springer-Verlag.

Levin, I. P., Huneke, M. E. & Jasper, J. D. (2000) *Information Processing at Successive Stages of Decision Making: Need for Cognition and Inclusion-Exclusion Effects*. **Organizational Behavior and Human Decision Processes**, 82**,** 171-193.

Levy, P. E. (2001) *Let's Not Forget the Organization in Organizational Justice: It Just Wouldn't Be Fair*. **Journal of Vocational Behavior**, 58 273-278.

Lind, E. A. (2001a) *Fairness heuristic theory: justice judgments as pivotal cognitions in organizational relations*. IN Greenberg, M. S. & Cropanzano, R. (Eds.) **Advances in Organizational Justice**. Stanford, CA: Stanford University Press.

Lind, E. A. (2001b) *Thinking critically about Justice Judgments*. **Journal of Vocational Behavior**, 58**,** 220-226.

Lind, E. A., Kray, L. & Thompson, L. (1998) *The social construction of injustice: Fairness judgments in response to own and other's unfair treatment by authorities*. **Organizational Behavior and Human Decision Processes**, 75**,** 1-22.

Lind, E. A. & Tyler, T. R. (1988) *The social psychology of procedural justice,* New York, Plenum.

Lohse, G. L. & Johnson, E., J. (1995) *A Comparison of Two Process Tracing Methods for Choice Tasks*. *International Conference on System Sciences.* Hawaii.

Lohse, G. L. & Johnson, E., J. (1996) *A Comparison of Two Process Tracing Methods for Choice Tasks*. **Organizational Behavior and Human Decision Processes**, 68**,** 28-43.

Maher, B. A. (1978) *Stimulus Sampling In Clinical Research: Representative Design Reviewed*. **Journal of Consulting and Clinical Psychology**, 46**,** 643-647.

Mahony, D. M. & Klaas, B. S. (2008) *The Role of Compensatory and Retributive Justice in Determining Damages in Employment Disputes*. **Journal of Management**, 34**,** 218-243.

Martin, J. & Harder, J. W. (1994) *Bread and roses: Justice and the distribution of financial and socioemotional rewards in organizations*. **Social Justice Research**, 7**,** 241-264.

Martocchio, J. J. & Judge, T. A. (1995) *When We Don't See Eye to Eye: Discrepancies Between Supervisors and Subordinates in Absence Disciplinary Decisions*. **Journal of Management**, 21**,** 251-278.

Mayer, R. C. & David, J. H. (1999) *The effect of the performance appraisal system on trust for management: A field quasi-experiment*. **Journal of Applied Psychology**, 84**,** 123-136.

Mayo, E. (2003) *The Hawthorne Experiment. Western Electric Company*. **The Human Problems of an Industrial Civilization**. London, Routledge.

Mazen, A., M. (1990) *The Moderating Role of Social Desirability, Age, and Experience in Human Judgment: Just how Indirect is Policy Capturing?* **Organizational Behavior and Human Decision Processes**, 45**,** 19-40.

McGuire, W. J. (1976) *Some Internal Psychological Factors Influencing Consumer Choice*. **Journal of Consumer Research**, 2.

Mendez Mediavilla, F. A., Landram, F. & Shah, V. (2008) *A Comparison of the Coefficient of Predictive Power, the Coefficient of Determination and AIC for Linear Regression*. *Decision Sciences Proceedings.*

Messick, D. M., Bloom, S., Boldizar, J. P. & Samuelson, C. D. (1985) *Why We Are Fairer Than Others*. **Journal of Experimental Social Psychology**, 21**,** 480-500.

Mikula, G., Petri, B. & Tanzer, N. (1990) *What People Regard As Unjust: Types And Structures Of Everyday Experiences Of Injustice*. **European Journal of Social Psychology**, 20**,** 133-149.

Mook, D. G. (1983) *In Defense of External Invalidity*. **American Psychologist**.

Niehoff, B. P. & Moorman, R. H. (1993) *Justice as a mediator of the relationship between methods of monitoring and organizational citizenship behavior*. **Academy of Management Journal**, 36**,** 527-556.

Nisbett, R. E. & Wilson, T. D. (1977) *Telling More Than We Can Know: Verbal Reports on Mental Processes*. **Psychological Review**, 84.

Norman, E. & Schulte-Mecklenbeck, M. (2009) *Take A Quick Click At That! Mouselab and Eye-Tracing as Tools to Measure Intuition*.

O'Donnell, E. (1996) *Measuring Cognitive Effort During Analytical Review: A Process-Tracing Framework with Experimental Results*. **Auditing: A Journal of Practice and Theory**, 15.

Pallant, J. (2007) *SPSS Survival Manual,* Berkshire, Open University Press.

Patrick, J. & James, N. (2004) *Process Tracing of Complex Cognitive Work Tasks*. **Journal of Occupational and Organizational Psychology**, 77**,** 259-280.

Patrick, J., James, N. & Ahmed, A. (2006) *Human Processes of Control: Tracing the Goals and Strategies of Control Room Teams*. **Ergonomics**, 49**,** 1395-1414.

Paulhus, D. L. & Vazire, S. (2007) *The Self-Report Method*. IN Robins, R. W., Fraley, R. C. & Krueger, R. F. (Eds.) **Handbook Of Research Methods in Personality Psychology**. London, Guilford Press.

Payne, J. W. (1976) *Task Complexity and Contingent Processing in Decision Making: An Information Search and Protocol Analysis*. **Organizational Behavior and Human Performance**, 16**,** 366-387.

Payne, J. W. (1982) *Contingent Decision Behavior*. **Psychological Bulletin**, 92**,** 382-402.

Payne, J. W., Bettman, J. R., Coupey, E. & Johnson, E., J. (1992) *A constructive process view of decision making: Multiple Strategies in Judgment and Choice*. **Acta Psychologica**, 80**,** 107-141.

Payne, J. W., Bettman, J. R. & Johnson, E., J. (1993) *The Adaptive Decision Maker,* Cambridge, Cambridge University Press.

Payne, J. W., Bettman, J. R. & Johnson, E. J. (1988) *Adaptive strategy selection in decision making*. **Journal of Experimental Psychology: Learning, Memory, & Cognition**, 14**,** 534-552.

Pitz, G. F. & Sachs, N. J. (1984) *Judgment and Decision: Theory and Application*. **Annual Review of Psychology**, 35**,** 139-163.

Read, D. (2005) *Judgment and Choice*. IN Kempf-Leonard, K. (Ed. *Encyclopedia of Social Measurement*. Elsevier Inc.

Reilly, B. A. & Doherty, M. E. (1989) *A Note on the Assessment of Self-Insight in Judgment Research*. **Organizational Behavior and Human Decision Processes**, 44**,** 123-131.

Reilly, B. A. & Doherty, M. E. (1992) *The Assessment of Self-Insight in Judgment Policies*. **Organizational Behavior and Human Decision Processes**, 53**,** 285-309.

Roehling, M. V. (1993) *"Extracting" Policy from Judicial Opinions: The Dangers of Policy Capturing in a Field Setting*. **Personnel Psychology**, 46**,** 477-502.

Rousseau, D. M. & Anton, R. J. (1988) *Fairness and Implied Contract Obligations in Job Terminations: A Policy-Capturing Study*. **Human Performance**, 1**,** 273-289.

Rousseau, D. M. & Aquino, K. (1993) *Fairness and Implied Contract Obligations in Job Terminations: The Role of Remedies, Social Accounts, and Procedural Justice*. **Human Performance**, 6**,** 135-149.

Rupp, D. E. & Paddock, E. L. (2010) *From justice events to justice climate: A multi-level temporal model of information aggregation and judgment*. **Research on Managing Group and Teams**, 13**,** 245-273.

Russell, C. J. & Bobko, P. (1992) *Moderated Regression Analysis and Likert Scales Too Coarse For Comfort*. **Journal of Applied Psychology**, 77**,** 336-342.

Russell, C. J., Pinto, J. L. & Bobko, P. (1991) *Appropriate Moderated Regression and Inappropriate Research Strategy: A Demonstration of Information Loss Due to Scale Coarseness*. **Applied Psychological Measurement**, 15**,** 257-266.

Russo, J. E. (1978) *Eye Fixations Can Save The World: A Critical Evaluation and a Comparison Between Eye Fixations and Other Information Processing Methodologies*. **Advances in Consumer Research**, 5**,** 561-570.

Rynes, S. & Lawler, J. (1983) *A Policy-Capturing Investigation of the Role of Expectancies in Decisions to Pursue Job Alternatives*. **Journal of Applied Psychology**, 68**,** 620-631.

Shanteau, J. (1992) *Competence in Experts: The Role of Task Characteristics*. **Organizational Behavior and Human Decision Processes**, 53**,** 252-266.

Shapiro, D. L. (1991) *The effects of explanations on negative reactions to deceit*. **Administrative Science Quarterly**, 36.

Shapiro, D. L. (2001) *The Death of Justice Theory is Likely if Theorists Neglect the "Wheels" Already Invented and the Voices of the Injustice victims*. **Journal of Vocational Behavior**, 58 235-242.

Shapiro, D. L., Buttner, E. H. & Barry, B. (1994) *Explanations: What factors enhance their perceived adequacy?* **Organizational Behavior and Human Decision Processes**, 58**,** 346-368.

Shaw, J. C., Wild, E. & Colquitt, J. A. (2003) *To Justify or Excuse?: A Meta-Analytic Review of the Effects of Explanations*. **Journal of Applied Psychology**, 88**,** 444-458.

Shaw, K. T. & Gifford, R. (1994) *Residents' and Burglars' Assessment of Burglary Risk from Defensible Space Cues* **Journal of Environmental Psychology**, 14**,** 177-194.

Sheluga, D. A., Jaccard, J. & Jacoby, J. (1979) *Preference, Search, and Choice: An Integrative Approach*. **Journal of Consumer Research**, 6**,** 166-76.

Sherer, P. D., Schwab, D. P. & Heneman III, H. G. (1987) *Managerial Salary-Raise Decisions: A Policy-Capturing Approach*. **Personnel Psychology**, 40**,** 27-38.

Skarlicki, D. P. & Folger, R. (1997) *Retaliation in the workplace: The roles of distributive, procedural, and interactional justice*. **Journal of Applied Psychology**, 82**,** 434-443.

Skarlicki, D. P. & Kulik, C. T. (2005) *Third-Party Reactions to Employee (Mis)Treatment: A Justice Perspective*. **Research in Organizational Behavior**, 26**,** 183-229.

Skitka, L. J. (2003) *Of Different Minds: An accessible identity model of justice reasoning*. **Personality and Social Psychology Review**, 7**,** 286-297.

Skitka, L. J., Winquist, J. & Hutchinson, S. (2003) *Are Outcome Fairness and Outcome Favorability Distinguishable Psychological Constructs? A Meta-Analytic Review*. **Social Justice Research**, 16**,** 309-341.

Slovic, P. & Lichtenstein, S. (1971) *Comparison of Bayesian and Regression Approaches to the Study of Information Processing in Judgment*. **Organizational Behavior and Human Decision Processes**, 6**,** 649-744.

Spearman, C. (1904) *"General intelligence", objectively determined and measured*. **The American Journal of Psychology**, 15**,** 201-292.

Stevens, J. P. (2002) *Applied Multivariate Statistics for the Social Sciences*, Mahwah, NJ, Lawrence Erlbaum.

Stewart, T. R. (1988) *Judgment Analysis: Procedures*. IN Brehmer, B. & Joyce, C. R. B. (Eds.) **Human Judgment: The SJT View,** North-Holland, Elsevier Science Publishers B.V.

Stewart, T. R. (1998) *Comments On The Distinction Between "Policy Capturing" And "Judgment Analysis"*, **The Brunswik Society,** September, http://www.brunswik.org/notes/japc.html, Accessed: 10 February 2010

Stumpf, S. A. & London, M. (1981) *Capturing Rater Policies in Evaluating Candidates for Promotion*. **Academy of Management Journal**, 24**,** 752-766.

Sundstrom, G. A. (1987) *Information Search and Decision Making: The Effects of Information Displays*. **Acta Psychologica**, 65**,** 165-179.

Svenson, O. (1979) *Process Descriptions of Decision Making*. **Organizational Behavior and Human Performance**, 23**,** 86-112.

Sweeney, P. D. & McFarlin, D. B. (1997) *Process and outcome: Gender differences in the assessment of justice*. **Journal of Organizational Behavior**, 18**,** 83-98.

Tabachnick, B., G. & Fidell, L., S. (1996) *Using Multivariate Statistics*, USA, HarperCollins College

Taylor, M. S., Tracy, K. B., Renard, M. K., Harrison, J. K. & Carroll, S. J. (1995) *Due Process in Performance Appraisal: A Quasi-experiment in Procedural Justice*. **Administrative Science Quarterly**, 40**,** 495-523.

Taylor, R. L. & Wilsted, W. D. (1974) *Capturing Judgment Policies: A Field Study of Performance Appraisal*. **Academy of Management Journal**, 17**,** 440-449.

Thibaut, J. & Walker, L. (1975) *Procedural Justice*, Hillsdale, NJ, Erlbaum.

Todd, P. & Benbasat, I. (1987) *Process Tracing Methods in Decision Support Systems Research: Exploring the Black Box*. **Management Information Systems Quarterly**, 11**,** 493-512.

Toplak, M. E., West, R. F. & Stanovich, K. E. (2011) *The cognitive reflection test as a predictor of performance on heuristics-and-biases tasks*. **Memory and Cognition**, (in press).

Tripp, T. M., Bies, R. J. & Aquino, K. (2002) *Poetic Justice or Petty Jealousy? The Aesthetics of Revenge*. **Organizational Behavior and Human Decision Processes**, 89**,** 966-984.

Tyler, T. R. & Bies, R. J. (1990) *Beyond formal procedures: The interpersonal context of procedural justice*. IN Carroll, J. (Ed.) **Applied Social psychology and organizational settings**. Hillsdale, NJ, Erlbaum.

Tyler, T. R. & Lind, E. A. (1992) *A relational model of authority in groups*. IN Zanna, M. (Ed.) **Advances in experimental social psychology**. San Diego, Academic Press.

Van den Bos, K. (2001) *Fundamental Research by Means of Laboratory Experiments Is Essential for a Better Understanding of Organizational Justice*. **Journal of Vocational Behavior**, 58**,** 254-259.

Van den Bos, K., Bruins, J., Wilke, H. A. M. & Dronkert, E. (1999) *Sometimes Unfair Procedures Have Nice Aspects: On the Psychology of the Fair Process Effect*. **Journal of Personality and Social Psychology**, 77**,** 324-336.

Van Gog, T., Paas, F., van Merrienboer, J. J. G. & Witte, P. (2005) *Uncovering the Problem-Solving Process: Cues Retrospective Reporting Versus Concurrent and Retrospective Reporting*. **Journal of Experimental Psychology: Applied**, 11**,** 237-244.

Webster, J. & Trevino, L. K. (1995) *Rational and Social Theories as Complementary Explanations of Communication Media Choices: Two Policy-Capturing Studies*. **Academy of Management Journal**, 38**,** 1544-1572.

Werner, S. & Ones, D. S. (2000) *Determinants of Perceived Pay Inequities: The Effects of Comparison Other Characteristics and Pay-System Communication*. **Journal of Applied Social Psychology**, 30**,** 1281-1309.

Willemsen, M. & Johnson, E., J. (2005) *MouselabWEB*. 0.99.1 ed.

Wilt, J. & Revelle, W. (2009) *Extraversion*. IN Leary, M. R. & Hoyle, R. H. (Eds.) **Handbook of Individual Differences in Social Behaviour**. New York, The Guildford Press.

Wolf, B. (2005) *Fundamental Principles of Brunswik's Representative Design*, **The Brunswik Society,** February, http://www.brunswik.org/notes/WolfRepDesign2005.pdf, Accessed: 10 February 2010

York, K. M. (1989) *Defining Sexual Harassment in Workplaces: A Policy-Capturing Approach*. **Academy of Management Journal**, 32**,** 830-850.

Zedeck, S. (1977) *An Information Processing Model and Approach to the Study of Motivation*. **Organizational Behavior and Human Decision Processes**, 18**,** 47-77.

Zedeck, S. & Cascio, W. F. (1982) *Performance Appraisal Decisions as a Function of Rater Training and Purpose of the Appraisal*. **Journal of Applied Psychology**, 67**,** 752-758.

Zedeck, S. & Kafry, D. (1977) *Capturing Rater Policies for Processing Evaluation Data*. **Organizational Behavior and Human Decision Processes**, 18**,** 269-294.

Appendix A: Example HMTL code for one profile in Mouselab

```
hp
$subject=$_GET['subject'];
$condnum=$_GET['condnum'];
?>
<HTML>
<HEAD>
<TITLE>MouselabWEB Survey</TITLE>
<script language=javascript src="mlweb.js"></SCRIPT>
<link rel="stylesheet" href="mlweb.css" type="text/css">
<body bgcolor="ffffff">
<font face="arial">
</head>

<body onLoad="timefunction('onload','body','body')">
<script language="javascript">
ref_cur_hit = "<?echo($condnum);?>";
subject = "<?echo($subject);?>";
</script>

<!--BEGIN TABLE STRUCTURE-->
<SCRIPT language="javascript">
//override defaults
mlweb_outtype="CSV";
mlweb_fname="mlwebform";
tag = "a0^a1`"
 + "b0^b1`"
 + "c0^c1`"
 + "d0^d1`"
 + "e0^e1`"
 + "f0^f1`"
 + "g0^g1`"
 + "h0^h1`"
 + "i0^i1`"
 + "j0^j1";
```

Here, labels are assigned to the Matrix of cues. Each situation screen contains a 2 (0 and 1) * 10 (a to J) matrix.

This section shows the information that will be revealed upon mouseover. This is locked for the first column, and the 'answer' to each cue will be shown in the second. The 'answer' is larger and in a red bold font compared to the other numbers visible in the Likert-scale.

```
txt = "^<pre><big><big>1</big></big> <big><big>2</big></big> <big><big>3</big></big>
<font color
=#ff0000><big><big><big><big><strong>4</strong></big></big></big></big></font>
<big><big>5</big></big> <big><big>6</big></big> <big><big>7</big></big></pre>`"
 + "^<pre><big><big>1</big></big> <big><big>2</big></big> <big><big>3</big></big>
<font color
=#ff0000><big><big><big><big><strong>4</strong></big></big></big></big></font>
<big><big>5</big></big> <big><big>6</big></big> <big><big>7</big></big></pre>`"
```

```
 +     "^<pre><big><big>1</big></big>          <big><big>2</big></big>          <font     color
=#ff0000><big><big><big><big><strong>3</strong></big></big></big></big></font>
<big><big>4</big></big>          <big><big>5</big></big>          <big><big>6</big></big>
<big><big>7</big></big></pre>`"
 +  "^<pre><big><big>1</big></big>     <big><big>2</big></big>     <big><big>3</big></big>
<font                                                                                    color
=#ff0000><big><big><big><big><strong>4</strong></big></big></big></big></font>
<big><big>5</big></big>  <big><big>6</big></big>  <big><big>7</big></big></pre>`"
 +  "^<pre><big><big>1</big></big>     <big><big>2</big></big>     <big><big>3</big></big>
<big><big>4</big></big>                                   <font                     color
=#ff0000><big><big><big><big><strong>5</strong></big></big></big></big></font>
<big><big>6</big></big>  <big><big>7</big></big></pre>`"
 +  "^<pre><big><big>1</big></big>     <big><big>2</big></big>     <big><big>3</big></big>
<big><big>4</big></big>                                   <font                     color
=#ff0000><big><big><big><big><strong>5</strong></big></big></big></big></font>
<big><big>6</big></big>  <big><big>7</big></big></pre>`"
 +  "^<pre><big><big>1</big></big>     <big><big>2</big></big>     <big><big>3</big></big>
<font                                                                                    color
=#ff0000><big><big><big><big><strong>4</strong></big></big></big></big></font>
<big><big>5</big></big>  <big><big>6</big></big>  <big><big>7</big></big></pre>`"
 +  "^<pre><big><big>1</big></big>     <big><big>2</big></big>     <big><big>3</big></big>
<font                                                                                    color
=#ff0000><big><big><big><big><strong>4</strong></big></big></big></big></font>
<big><big>5</big></big>  <big><big>6</big></big>  <big><big>7</big></big></pre>`"
 +  "^<pre><big><big>1</big></big>     <big><big>2</big></big>     <big><big>3</big></big>
<font                                                                                    color
=#ff0000><big><big><big><big><strong>4</strong></big></big></big></big></font>
<big><big>5</big></big>  <big><big>6</big></big>  <big><big>7</big></big></pre>`"
 +  "^<pre><big><big>1</big></big>     <big><big>2</big></big>     <big><big>3</big></big>
<font                                                                                    color
=#ff0000><big><big><big><big><strong>4</strong></big></big></big></big></font>
<big><big>5</big></big>  <big><big>6</big></big>  <big><big>7</big></big></pre>";

state = "1^1`"
 + "1^1`"
 + "1^1`"
 + "1^1`"
 + "1^1`"
 + "1^1`"
 + "1^1`"
 + "1^1`"
 + "1^1`"
 + "1^1";
```

This section shows the information that is automatically visible within the matrix. In the first column, the cue is shown (the question asked to the individual being appraised), and in the second column, "Answer..."

```
box = "<big>Did the outcomes of your appraisal reflect the effort you put into your
work?</big>^Answer...`"
```

```
+ "<big>Did the outcomes of your appraisal reflect the quality of your work?</big>^Answer...`"
+ "<big>Did the appraisal procedures take your views and perspectives into account?</big>^Answer...`"
+ "<big>Was the information used as part of the appraisal procedure accurate?</big>^Answer...`"
+ "<big>Were you treated with dignity and respect throughout the appraisal process?</big>^Answer...`"
+ "<big>Did those involved in the appraisal refrain from improper remarks or comments towards you?</big>^Answer...`"
+ "<big>Did you receive reasonable explanations regarding the appraisal process?</big>^Answer...`"
+ "<big>Were you provided with any information you needed in good time?</big>^Answer...`"
+ "<big>Overall, were you pleased with the outcome of your appraisal?</big>^Answer...`"
+ "<big>In general, do you like working for your employer?</big>^Answer...";

CBCol = "0^0";
CBRow = "0^0^0^0^0^0^0^0^0^0";
W_Col = "750^400";
H_Row = "35^35^35^35^35^35^35^35^35^35";

chkchoice = "nobuttons";
btnFlg = 0;
btnType = "radio";
btntxt = "";
btnstate = "";
btntag = "";
btnColor = "red";
to_email = "";
chkFrm=false;
warningTxt = "Some questions have not been answered. Please answer all questions before continuing!";

//Delay: a0 a1 b0 b1 c0 c1 d0 d1 e0 e1 f0 f1 g0 g1 h0 h1 i0 i1 j0 j1
delay = "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
```

```
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0`"
 + "0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0^0";
connectCol = 0;
connectRow = 0;
activeClass = "actTD";
inactiveClass = "inactTD";
boxClass = "boxTD";
cssname = "mlweb.css";
nextURL = "profile4.php";
expname = "profile3.php";
```

Which appraisal to be viewed next? (nextURL)

Current appraisal (expname)

```
randomOrder = true;
recOpenCells = false;
masterCond = 1;
loadMatrices();
</SCRIPT>
<!--END TABLE STRUCTURE-->

<FORM name="mlwebform" onSubmit="return checkForm(this)" method="POST"
action="save.php"><INPUT type=hidden name="procdata" value="">
<input type=hidden name="subject" value="">
<input type=hidden name="expname" value="">
<input type=hidden name="nextURL" value="">
<input type=hidden name="choice" value="">
<input type=hidden name="condnum" value="">
<input type=hidden name="to_email" value="">

<!--BEGIN preHTML-->
```

Scale anchors for the 7 point Likert-scale

```
<pre><strong> To a very small extent</strong> &rArr; <strong>To a very large
extent</strong></pre>

<!--END preHTML-->

<!-- MOUSELAB TABLE -->

<TABLE border=1>
<TR>
<!--cell a0(tag:a0)-->
<TD><DIV ID="a0_cont" style="position: relative; height: 35px; width: 750px;"><DIV
ID="a0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip:
rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="a0_td" align=center valign=center
```

width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="a0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 50px 0px); z-index: 2;"><TABLE><TD ID="a0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Did the outcomes of your appraisal reflect the effort you put into your work?</TD></TABLE></DIV><DIV ID="a0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="a0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell a1(tag:a1)-->
<TD><DIV ID="a1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="a1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="a1_td" align=center valign=center width=400 height=35 class="actTD">1</TD></TABLE></DIV><DIV ID="a1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 50px 0px); z-index: 2;"><TABLE><TD ID="a1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="a1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="a1" onMouseOver="ShowCont('a1',event)" onMouseOut="HideCont('a1',event)"><IMG NAME="a1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell b0(tag:b0)-->
<TD><DIV ID="b0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="b0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="b0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="b0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 50px 0px); z-index: 2;"><TABLE><TD ID="b0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Did the outcomes of your appraisal reflect the quality of your work?</TD></TABLE></DIV><DIV ID="b0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="b0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell b1(tag:b1)-->
<TD><DIV ID="b1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="b1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="b1_td" align=center valign=center width=400 height=35 class="actTD">2</TD></TABLE></DIV><DIV ID="b1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 50px 0px); z-index: 2;"><TABLE><TD ID="b1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="b1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="b1" onMouseOver="ShowCont('b1',event)" onMouseOut="HideCont('b1',event)"><IMG NAME="b1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>

<!--cell c0(tag:c0)-->
<TD><DIV ID="c0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="c0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="c0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="c0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 50px 0px); z-index: 2;"><TABLE><TD ID="c0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Did the appraisal procedures take your views and perspectives into account?</TD></TABLE></DIV><DIV ID="c0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="c0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell c1(tag:c1)-->
<TD><DIV ID="c1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="c1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="c1_td" align=center valign=center width=400 height=35 class="actTD">3</TD></TABLE></DIV><DIV ID="c1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 50px 0px); z-index: 2;"><TABLE><TD ID="c1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="c1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="c1" onMouseOver="ShowCont('c1',event)" onMouseOut="HideCont('c1',event)"><IMG NAME="c1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell d0(tag:d0)-->
<TD><DIV ID="d0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="d0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="d0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="d0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 2;"><TABLE><TD ID="d0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Was the information used as part of the appraisal procedure accurate?</TD></TABLE></DIV><DIV ID="d0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="d0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell d1(tag:d1)-->
<TD><DIV ID="d1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="d1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="d1_td" align=center valign=center width=400 height=35 class="actTD">4</TD></TABLE></DIV><DIV ID="d1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 2;"><TABLE><TD ID="d1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="d1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A

HREF="javascript:void(0);" NAME="d1" onMouseOver="ShowCont('d1',event)" onMouseOut="HideCont('d1',event)"><IMG NAME="d1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell e0(tag:e0)-->
<TD><DIV ID="e0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="e0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="e0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="e0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 2;"><TABLE><TD ID="e0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Were you treated with dignity and respect throughout the appraisal process?</TD></TABLE></DIV><DIV ID="e0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="e0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell e1(tag:e1)-->
<TD><DIV ID="e1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="e1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="e1_td" align=center valign=center width=400 height=35 class="actTD">5</TD></TABLE></DIV><DIV ID="e1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 2;"><TABLE><TD ID="e1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="e1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="e1" onMouseOver="ShowCont('e1',event)" onMouseOut="HideCont('e1',event)"><IMG NAME="e1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell f0(tag:f0)-->
<TD><DIV ID="f0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="f0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="f0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="f0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 2;"><TABLE><TD ID="f0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Did those involved in the appraisal refrain from improper remarks or comments towards you?</TD></TABLE></DIV><DIV ID="f0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="f0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell f1(tag:f1)-->
<TD><DIV ID="f1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="f1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="f1_td" align=center valign=center

width=400 height=35 class="actTD">6</TD></TABLE></DIV><DIV ID="f1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 2;"><TABLE><TD ID="f1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="f1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="f1" onMouseOver="ShowCont('f1',event)" onMouseOut="HideCont('f1',event)"><IMG NAME="f1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell g0(tag:g0)-->
<TD><DIV ID="g0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="g0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="g0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="g0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 2;"><TABLE><TD ID="g0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Did you receive reasonable explanations regarding the appraisal process?</TD></TABLE></DIV><DIV ID="g0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="g0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell g1(tag:g1)-->
<TD><DIV ID="g1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="g1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="g1_td" align=center valign=center width=400 height=35 class="actTD">7</TD></TABLE></DIV><DIV ID="g1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 2;"><TABLE><TD ID="g1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="g1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="g1" onMouseOver="ShowCont('g1',event)" onMouseOut="HideCont('g1',event)"><IMG NAME="g1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell h0(tag:h0)-->
<TD><DIV ID="h0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="h0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="h0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="h0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 2;"><TABLE><TD ID="h0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Were you provided with any information you needed in good time?</TD></TABLE></DIV><DIV ID="h0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="h0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->

<!--cell h1(tag:h1)-->
<TD><DIV ID="h1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="h1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 100px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="h1_td" align=center valign=center width=400 height=35 class="actTD">8</TD></TABLE></DIV><DIV ID="h1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 2;"><TABLE><TD ID="h1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="h1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="h1" onMouseOver="ShowCont('h1',event)" onMouseOut="HideCont('h1',event)"><IMG NAME="h1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell i0(tag:i0)-->
<TD><DIV ID="i0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="i0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="i0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="i0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 2;"><TABLE><TD ID="i0_tdbox" align=center valign=center width=750 height=35 class="boxTD">Overall, were you pleased with the outcome of your appraisal?</TD></TABLE></DIV><DIV ID="i0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="i0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell i1(tag:i1)-->
<TD><DIV ID="i1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="i1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="i1_td" align=center valign=center width=400 height=35 class="actTD">9</TD></TABLE></DIV><DIV ID="i1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 2;"><TABLE><TD ID="i1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="i1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="i1" onMouseOver="ShowCont('i1',event)" onMouseOut="HideCont('i1',event)"><IMG NAME="i1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR><TR>
<!--cell j0(tag:j0)-->
<TD><DIV ID="j0_cont" style="position: relative; height: 35px; width: 750px;"><DIV ID="j0_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 1;"><TABLE><TD ID="j0_td" align=center valign=center width=750 height=35 class="actTD"></TD></TABLE></DIV><DIV ID="j0_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750px; clip: rect(0px 750px 35px 0px); z-index: 2;"><TABLE><TD ID="j0_tdbox" align=center valign=center width=750 height=35 class="boxTD">In general, do you like working for your

employer?</TD></TABLE></DIV><DIV ID="j0_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 750x; z-index: 5;"><A HREF="javascript:void(0);"><IMG NAME="j0" SRC="transp.gif" border=0 width=750 height=35></A></DIV></DIV></TD>
<!--end cell-->
<!--cell j1(tag:j1)-->
<TD><DIV ID="j1_cont" style="position: relative; height: 35px; width: 400px;"><DIV ID="j1_txt" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 1;"><TABLE><TD ID="j1_td" align=center valign=center width=400 height=35 class="actTD">10</TD></TABLE></DIV><DIV ID="j1_box" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; clip: rect(0px 400px 35px 0px); z-index: 2;"><TABLE><TD ID="j1_tdbox" align=center valign=center width=400 height=35 class="boxTD1">Answer...</TD></TABLE></DIV><DIV ID="j1_img" STYLE="position: absolute; left: 0px; top: 0px; height: 35px; width: 400px; z-index: 5;"><A HREF="javascript:void(0);" NAME="j1" onMouseOver="ShowCont('j1',event)" onMouseOut="HideCont('j1',event)"><IMG NAME="j1" SRC="transp.gif" border=0 width=400 height=35></A></DIV></DIV></TD>
<!--end cell--></TR></TABLE>

<!-- END MOUSELAB TABLE -->

The overall judgment question

<!--BEGIN postHTML-->

<p><big>How fair or unfair was this performance appraisal?</big>
<p>

<!-- Begin HTML Scale: name=overallfairness-->
<TABLE width=80%><TR><TD align=center>1</TD><TD align=center>2</TD><TD align=center>3</TD><TD align=center>4</TD><TD align=center>5</TD><TD align=center>6</TD><TD align=center>7</TD><TD align=center>8</TD><TD align=center>9</TD><TD align=center>10</TD><TD align=center>11</TD><TD align=center>12</TD><TD align=center>13</TD><TD align=center>14</TD><TD align=center>15</TD><TD align=center>16</TD><TD align=center>17</TD><TD align=center>18</TD><TD align=center>19</TD><TD align=center>20</TD></TR><TR><td width=5% align=center><INPUT TYPE=RADIO NAME='overallfairness' VALUE='1' onClick="RecordEventData(this,event);" onMouseOver="RecordEventData(this,event);" onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT TYPE=RADIO NAME='overallfairness' VALUE='2' onClick="RecordEventData(this,event);" onMouseOver="RecordEventData(this,event);" onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT TYPE=RADIO NAME='overallfairness' VALUE='3' onClick="RecordEventData(this,event);" onMouseOver="RecordEventData(this,event);" onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT TYPE=RADIO NAME='overallfairness' VALUE='4' onClick="RecordEventData(this,event);" onMouseOver="RecordEventData(this,event);" onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT TYPE=RADIO NAME='overallfairness' VALUE='5' onClick="RecordEventData(this,event);"

onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='6' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='7' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='8' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='9' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='10' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='11' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='12' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='13' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='14' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='15' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='16' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='17' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='18' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='19' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"
onMouseOut="RecordEventData(this,event);"></td><td width=5% align=center><INPUT
TYPE=RADIO NAME='overallfairness' VALUE='20' onClick="RecordEventData(this,event);"
onMouseOver="RecordEventData(this,event);"

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nMouseOut="RecordEventData(this,event);"></td></TR><TR><td align=center>Totally Unfair</td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center></td><td align=center>Totally Fair</td></TR></TABLE>
<!-- End HTML Scale: name=overallfairness-->
<p>


<!--END postHTML--><INPUT type="submit" value="Continue" onClick=timefunction('submit','submit','submit')></FORM></body></html>

<H2 align="right"> 1/59 </H2>
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