

Contrastive analysis of verdicts, cognitive activity, reasoning and information-processing in judicial judgements.

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Abstract

This study assesses the performance of two Panels of Spanish judges by analysing the judicial judgements. A content analysis was undertaken to determine the impact of informal reasoning in the judgements through the presence of bias and heuristics (Perkins, 1989). The results reveal evidence of bias and heuristics in 80.3% of the judgements. Moreover, an interaction between the sources of bias and the Panel of judges was observed. Furthermore, there was a significant relationship between guilty verdicts and some sources of bias. As for information-processing, the analysis of cognitive activity showed that the Panels employed different cognitive strategies. Finally, the results are discussed in the light of strategies designed to mitigate the negative effects of bias and heuristics in judicial judgement-making.

Keywords: judgement, verdict, cognitive activity, reasoning, bias, heuristics, information-processing.

Introduction

One of the key issues concerning judicial decision-making is sentence disparity, and several operative approaches have been adopted. Some researchers have focused on sentencing disparity in similar cases (i.e., Austin & Williams, 1977); others have centred on disparity in sentence severity by comparing different sentences in similar cases, be they simulated or real task (i.e., Partridge and Eldridge, 1974; Diamond and Zeisel, 1975); others have sought to account for the variance explained in sentencing by extralegal factors (i.e., Hogarth, 1971; Hagan, 1974; Hagan et al., 1980); whereas others have considered the degree of variance not explained in terms of legal factors (Barry and Greer, 1981; Sutton, 1978, among others). In spite of the wide range of approaches adopted, most of the studies have reported a significant degree of disparity in judicial sentencing. Nevertheless, there is considerable disagreement as to the underlying causes of disparity. Thus, some authors have emphasised the weight of legal factors (i.e., Ebbesen & Konecni, 1981), others extralegal factors (i.e., Wilczynski and Morris, 1993); and some on both legal and extralegal factors (i.e., Diamond, 1981). Having reviewed 140 studies, Kapardis (1985) suggests that legal factors account for most of sentence disparity though there is also empirical evidence indicating that the judge plays an important role in sentencing, but the findings concerning variables such as political beliefs, age, gender and religion are inconsistent.

In 1987, Pennington and Lloyd-Bostock argued in favour of cognitive analysis in the study of sentence disparity, and emphasised the need for a filter to clarify and facilitate information-processing for the judge in sentencing. Likewise, Arce and others (2001) have observed how judges not only differ in sentencing and sentence severity i.e., the decision to incarcerate, but also in the interpretation of the evidence itself. In other words, the mechanisms underlying disparity in the decision to incarcerate rest on to a large extent on the credibility and validity assigned to the evidence, and the reconstruction of events is mediated by the verdict reached. Moreover, cognitive analysis has revealed sources of systematic bias in judgements¹ and sentencing. Thus anchorage i.e., the imposition of a previous decision (Saks and Kidd, 1986; Wagenaar, 1995) has been reported by Ebbesen & Konecni (1981) in 84% cases where the sentence was based on the parole

¹ The term judgement refers to the judge's or court's written decision. In some countries the term sentence is used, whereas in others the term sentence is used only to refer to a guilty verdict. In this paper, the term

officer's recommendation. Similarly, Garrido and Herrero (1997) have estimated anchorage, based on the prosecution's plea, to be around 81.75% of the judgements in cases of sexual offences. Finally, Fariña and others (in press), in an archive study of 555 criminal judgments involving a wide variety of cases types found anchorage stemming from the prosecution plea or from a previous judgement in 63.6% of the judgements reviewed. Furthermore, the authors have observed the direct effects of anchorage in cognitive information-processing i.e., the presence of this heuristic is linked to fewer attributions to the mental state of the plaintiff, fewer descriptions of the interactions, legal details, contextual information, neutral propositions, pro-accused reasoning, fewer physical and temporal causal links, and fewer reproductions of conversations.

Thus, from a cognitive perspective, this study aims to analyse the judicial judgements of two Panel of judges in order to detect sources of bias, and to extend the search beyond anchorage to other sources both motivational and cognitive (Ross, 1977; Kruglanski & Azjen, 1983) since they may play a relevant role in judicial decisions (Saks and Kidd, 1986). Moreover, content analysis of cognitive activity in sentencing was also performed to provide a cognitive explanation of disparity mediated by the personal characteristics of the judges. Furthermore both Panels of judges were compared to assess sources of bias and cognitive activity in judgement-making.

Method

Protocols

A total of 381 criminal judgements from the two Audiencias Provinciales² of the Autonomous Community of Galicia (N.W. Spain) were selected for study. The first Panel (from now on referred to as Panel 1) was responsible for 272 judgements, and the second Panel (from now on referred to as Panel 2) 109 judgements. The judgements involved a wide range of case types such as: assault, theft, robbery, traffic offences, public health offences, drug trafficking, environmental offences, fraud, etc. As for the verdict, 300 (78.74%) were guilty, and 81 (21.26%) not-guilty verdicts.

Analysis of protocols

The protocols, that is the judgements, consist of two sections, the first referring to the facts, and the other to legal considerations. Both have been included in the analysis.

judgement is used to refer to the judge's or court's written decisions whether it be a guilty or not guilty verdict.

² The High Court is the closest equivalent to the Spanish Audiencia Provincial.

The first objective of the analysis of these protocols was to search for heuristics and bias. The following categories were productive: intended attribution (i.e., external attribution); dispositional attribution (i.e., internal attribution); belief in a just world; ego enhancement and defence (false consensus, egocentric attribution); preconceptions (presumed covariation, illusory correlation, causal theories or representativeness); salience and availability (sampling bias, selective attention, selective recall, fundamental attribution error); and anchorage (for definitions and examples see Ross, 1977; Kruglanski & Azjen, 1983; Novo, 2000). It should be noted that the attributional processes refer to the characterization of behaviour as a personality trait or as situational effect that directly influences the decision-maker (i.e., the judge) in a way that the judgement rests on these inferences rather than on the evidence (Baxter et al., 1990). As for "intended attribution" this source of bias is related to inferences regarding the consequences or motives of particular action, that is, where the behaviour of the actor is considered to be transitory (i.e., "... since the accused only intended to hurt and not kill his wife ..."). As for "dispositional attribution", this is linked to the attribution of the effects of an action to a personality trait of the actor (i.e., though he has no previous convictions, the accused is of a violent nature which explains why.....). Encoding consisted of noting the sources of bias detected with the exception of anchorage that was defined as the prosecution's plea (Garrido & Herrero, 1997) or, in the cases of an appeal, the judge's previous judgement (Fitzmaurice & Pease, 1986). Anchorage was measured via the decision to incarcerate or the length of the sentence. Thus, anchorage was measured via the initial and direct estimates (Saks & Kidd, 1986; Wagenaar, 1995). The grouping of some sources of bias into a categories was necessary in order to design a reliable system that requires mutual exclusion i.e., no overlapping of categories (Weick, 1985).

Since the aim was to evaluate possible differences in cognitive processing in the reconstruction of events, a system of categories was used that has proven to be useful and reliable in other studies (i.e., Fariña et al., in press). This system enables us to examine the underlying processes that influence judgement making. Moreover, a procedure based on successive approximations was used to identify new categories related to the case in question. The list and description of the productive categories employed in the present study are as follows:

IDIOSYNCRATIC INFORMATION. An account of the number of references a judge makes to his/her internal state, cognitive processes and/or emotions.

DESCRIPTION OF INTERACTIONS. Total number of descriptions of interrelated actions and reactions.

REPRODUCTION OF CONVERSATIONS. Total number of virtual reproductions of expressions, certain manners of speaking or other people's vocabulary.

CONTEXTUAL INCRUSTATION. Total number of embeddings related to the law of precedence and jurisprudence.

AMOUNT OF LEGAL DETAILS An account of the number of legal references mentioned in the judgement.

CONTEXTUAL INFORMATION. Total number of references made to places, dates, time periods, etc.

ATTRIBUTIONS ON THE ACCUSED'S MENTAL STATE. An account of the references made by the judge to the mental state or motives of the accused.

ATTRIBUTIONS ON THE PLAINTIFF'S MENTAL STATE. An account of the references made by the judge to the mental state or motives of the plaintiff.

PHYSICAL CAUSAL RELATIONSHIPS. Total number of physical-causal events, when there is a presumed nexus between two physical events.

TEMPORAL CAUSAL RELATIONSHIP. Total number of temporal-causal relationships, when there is the existence of temporal continuity between two events.

NUMBER OF PRO-ACCUSED STATEMENTS.

NUMBER OF NEUTRAL STATEMENTS.

NUMBER OF STATEMENTS AGAINST THE ACCUSED.

Reliability

The encoders underwent exhaustive training prior to the real encoding of the protocols. For this purpose two encoders were previously required to compare their encoding of material that was not part of this study, with the pattern coding, taking the agreement index as a contrastive procedure designed correct bias in the pre-encoding stage. Moreover, one of the encoders had previous experience in other studies where the same procedure had been used (Arce, Fariña and Fraga, 2000; Novo, 2000; Arce, Fariña and Novo, 1996).

Reliability was calculated by using two different statistical tools for the analysis of categorical or discrete variables i.e., the concordance index for the former and correlations for the

latter. In relation to the concordance index, the cut-off was considered to be consistent above .80 (Tversky, 1977). Though the correlation coefficients were used to measure the consistency of the discrete variables i.e., cognitive activity, we are aware that this index undoubtedly needs correcting. Since this index is not accurate because it is not sensitive to the exact correspondence of the counts, the correspondence of the counts was verified. With this safeguard, Carrera and Fernández-Dols (1992) report that a correlation greater than .70 is reliable.

For the calculation of encoder consistency 10% of the protocols were encoded once again by the same encoder and by the other encoder one week after the end of the original encoding.

Table 1. *Within- and between-encoder consistency in "source of bias". Concordance index (CI).*

Source of bias	within encoder 1	within encoder 2	between encoders 1-2	between encoders 2-1
Anchorage	1	1	1	1
Dispositional attribution	1	1	1	1
Intended attribution	1	1	1	1
Ego enhancement and defence	1	.9	1	1
Belief in a just world	1	1	1	1
Preconceptions	1	.9	.8	.85
<u>Salience and availability</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>

Note: CI= Agreements /(agreements + disagreements).

The results of the analysis of concordance of the evaluations of different sources of bias (see Table 1) reveals that, having systematically gone beyond the cut-off of .80 (Tversky, 1977), the raw data are consistent.

Table 2. *Between- and within-consistency of cognitive processes.*

Variable	within 1 <i>r</i> 1	within 2 <i>r</i> 2	between 1-2 <i>r</i> 12	between 2-1 <i>r</i> 21
Amount of legal details	.953*	.998*	1.00*	.990*
Attributed accused mental state	.867*	.998*	1.00*	1.00*
Attributed victim mental state	1.00*	.990*	1.00*	1.00*
Contextual incrustation	1.00*	1.00*	1.00*	1.00*

Contextual information	.811*	.992*	.902*	.893*
Description of interactions	.974*	.999*	.923*	.958*
Idiosyncratic information	1.00*	1.00*	1.00*	1.00*
Neutral statements	.965*	1.00*	.843*	.932*
Physical causal relations	.899*	.999*	.812*	.880*
Pro-accused statements	.992*	.997*	1.00*	1.00*
Reproduction of conversations	.958*	.998*	1.00*	1.00*
Statements against the accused	.980*	.982*	.901*	.961*
Temporal causal relations	.831*	1.00*	.942*	1.00*

Note: * $p < .001$.

Bearing in mind the safeguards and the cut-off, the analysis of consistency of cognitive activity, both within- and between-encoder (see results in Table 2), indicate that the data obtained from the content analysis of cognitive activity are consistent ($r > .70$).

Moreover, these instruments have proven to be reliable, effective, and valid in other studies as well as being consistent with other methods (e.g., Arce, Fariña and Novo, 1996). Thus, bearing in mind the within- and between-encoder consistency as well as the between-study and between-methods consistency, we can sustain that our registers are reliable (Wicker, 1975). Having applied these instruments for the measurement of consistency, the data appear to be highly reliable.

Data analysis

As is well known, the discriminant analysis is a robust test, in particular with homogeneity of variance that is presumed with similar sized groups (large/small < 1.5). However, this was not our case. Though many authors do not consider this to be of importance the absence of homogeneity of variance can lead to important deviations in the significance of the results (Stevens, 1986). Consequently, as a safeguard, the variables were transformed using the square root to homogenise the variances (Dixon & Massey, 1983, pp. 373). Nevertheless, the means presented in the text and tables are raw data. After applying these safeguards, the box test was performed to estimate the homogeneity of variance. The procedure for obtaining the discriminant equation was stepwise, by selecting the best set of discriminators. This procedure should be performed with care and always when the subject/variable ratio is small (< 5), given that the best set of discriminators is

positively biased (Rencher and Larson, 1980), though this was not our case (>29). Moreover, as a safeguard a cross validation was performed.

Results

Contingencies of the sources of bias

Table 3 shows the frequencies of the different sources of bias in judgements, which range from 53.5% in sentences with anchorage to 4.2% in cases of the belief of a just world. The addition of the totals and the grouping of the variables according to motivational and cognitive bias (see Ross, 1997; Kruglanski and Azjen, 1983 for a discussion), an incidence of cognitive bias (i.e., anchorage, preconceptions, and salience and availability) was observed in 65.87% of the protocols, whereas motivational bias (intended attribution, dispositional attribution, belief in a just world, ego enhancement and defence) was observed in 45.45% of the protocols. In general, biased decisions (79.79%) were observed to prevail in contrast to non-biased decisions (20.21%), $\chi^2(1)=135.247$; $p<.001$.

Table 3. *Frequency of heuristics and bias detected in judgements.*

<u>Variable</u>	<u>Presence(%)</u>
Anchorage	204(53.5)
Dispositional attribution	14(3.7)
Intended attribution	120(31.5)
Ego enhancement and defence	87(22.8)
Belief in a just world	16(4.2)
Preconceptions	56(14.7)
<u>Salience and availability</u>	<u>22(5.8)</u>

Analysis of the relationship between Panel of judges and judgement-making

The most frequent verdict observed was guilt 300 (78.7%), $\chi^2(1)=128.868$; $p<.001$, of these 220 corresponded to Panel 1 and 80 to Panel 2 i.e., both Panels reached a similar number of guilty verdicts, $\chi^2(1;n=381)= 3.078$; ns; $\phi=.079$. Likewise, the consideration of aggravating circumstances was similar in both Panels (14 and 19.3% respectively), $\chi^2(1;n=381)= 1.667$; ns;

$\phi = -.066$. As for mitigating circumstances, however, Panel 1 considered (8.8%) fewer mitigating circumstances than Panel 2 (17.4%), $\chi^2(1; n=381) = 5.758$; $p < .05$; $\phi = .016$. Thus, it appears that judgements, in accordance with the results obtained by Novo (2000) and Arce, Fariña and Novo (2000), "tend towards a guilty verdict".

Analysis of the relationship between sources of bias and verdict

Table 4. *Analysis of the relationship between sources of bias and verdict.*

Source of bias	%GV with it	%GV without it	χ^2	p	ϕ
Anchorage	91.6	65	38.896	.000	.311
Dispositional attribution	78.9	85.7	.079	.779	.032
Intended attribution	85.8	76.1	4.172	.041	.111
Ego enhancement and defence	87.4	76.7	3.98	.046	.11
Belief in a just world	79.1	81.3	.0	1	.011
Preconceptions	80.5	71.4	1.86	.173	.079
<u>Salience and availability</u>	<u>78.7</u>	<u>86.4</u>	<u>.345</u>	<u>.557</u>	<u>.044</u>

Note: D.F.=1. %GV (guilty verdicts) with it= % of guilty verdicts with this source of bias; %GV without it= % of guilty verdicts without this source of bias.

The results shown in Table 4 indicate that three sources of bias (anchorage, intended attribution, and ego enhancement and defence), are directly linked to the verdict reached in such a way that they are "driven towards a guilty verdict". In other words, the judgement entails a systematic bias towards a guilty verdict mediated by these sources of bias.

Contrastive analysis of sources of bias and the Panels of judges

Table 5. *Analysis of the relationship between sources of bias and the Panels of judges.*

Source of bias	%Panel 1	%Panel 2	χ^2	p	ϕ
Anchorage	52.6	56	.236	.627	.031
Dispositional attribution	2.2	7.3	4.434	.035	.123
Intended attribution	29.4	36.7	1.592	.207	.071
Ego enhancement and defence	30.9	2.8	33.36	.000	-.303

Belief in a just world	5.9	0	5.311	.021	-.133
Preconceptions	20.2	.9	21.61	.000	-.246
<u>Salience and availability</u>	<u>5.1</u>	<u>7.3</u>	<u>.344</u>	<u>.558</u>	<u>.042</u>

Note: D.F.=1.

The bias was detected in 82.4% of the judgements of Panel 1 and in 73.4% of Panel 2, indicating that both panels exhibit a similar degree of bias in their judgements $\chi^2(1)=3.337$; ns; $\phi=.049$. In relation to each individual source of bias (see Table 5), Panel 1 resorted more to ego enhancement and defence, belief in a just world, and preconceptions, whereas Panel 2 made more references to dispositional attribution. In short, both panels employ mainly informal reasoning strategies (Galotti, 1989), and there is a relationship between panel and sources of bias.

Panel and information-processing

Taking the variables of cognitive activity as independent variables and the variable panel as a grouping variable, a discriminant analysis was performed, a significant discriminant function was found (eigenvalue=3.446; Wilks' Lambda =.152; $\chi^2(13)= 700.474$; $p<.001$; canonical correlation=.921).

Table 6. *Standardized canonical discriminant function coefficients.*

<u>Variables</u>	<u>Function</u>
Amount of legal details	-.362
Attributed accused mental state	.232
Attributed victim mental state	.173
Contextual incrustation	.960
Contextual information	-.178
Description of interactions	.774
Idiosyncratic information	.163
Neutral statements	-.448
Pro-accused statements	-.222
Reproduction of conversations	.369
Statements against the accused	-.640
<u>Temporal causal relations</u>	<u>-.307</u>

Note: This function classified correctly 96.1% of the cases, validated via cross-validation. Furthermore, we can be confident of the reliability of the results since the protocols/variables ratio is large >27 . The Box test was not significant ($F=.264$; ns). Group centroids: Panel 1=1.484; Panel 2=-3.737.

The discriminant function (see Table 6) reveals the following variables that discriminate the contents of sentences between both panels: pro-accused statements, against-accused and neutral, legal details and contextual incrustations, description of interactions, reproduction of conversations and contextual information, idiosyncratic information, attributions of the state mental of the accused and the plaintiff, and the causal temporal nexus. In fact, in comparison to Panel 2, Panel 1 rested their decisions more on attributions about the mental state of the plaintiff and accused, descriptions of interactions, reproduction of conversations, references to internal states (idiosyncratic) and contextual incrustations. In contrast, Panel 2 resorted more to legal details, contextual information, causal temporal nexus, and more neutral, against the accused, and pro-accused statements. Grouping the variables according to thematic content (see Fariña et al., in press, for a discussion), Panel 1 is driven more by extralegal information (attributions to the mental states of the plaintiff and accused unsubstantiated by the evidence, and idiosyncratic information). As for the factual evidence of the case, the panels employed different strategies for establishing nexus with the factual evidence. Whereas Panel 1 referred to the factual evidence through the description of interactions and the reproduction of conversations, Panel 2 focused on contextual information. As for legal motivation, the panels employed different strategies. Whilst Panel 1 referred to the law of precedence and jurisprudence (contextual incrustations), Panel 2 based their decisions more on legal references (legal details). In relation to information processing strategies, bearing in mind both panels arrived at a similar number of guilty verdicts, Panel 2 tended to employ an "information integration strategy", whereas Panel 1 resorted more to "information exclusion criteria". In other words, Panel 2 valued information favourable, against and neutral to the accused as well as resorting more to temporal causal relationships. In short, the results support the view that the discriminant function can be interpreted as a construct that reveals two qualitatively different ways of judging.

Discussion

Bearing in mind this is an archival study, it is assumed that both groups of judgements are comparable since the strange variables that could mediate the results are counterbalanced by both groups of judgements i.e., panels. Nevertheless, this assumption may lead to inference errors. For example, the estimates of mitigating circumstances do not necessarily imply differences between the panels, but rather may be a consequence of different evidence. Moreover, it is essential to repeat these studies with different panels and case types in order to validate the reliability of the results of this research.

Thus we may conclude that:

- The panels exhibited a high degree of informal reasoning in their judgements. This data is significantly robust given that it is valid for both panels and has proven to be consistent in others studies (e.g., Arce and others, 1996; Garrido and Herrero, 1997; Novo, 2000). Given that informal reasoning implies bias and errors in judgement making (e.g., Nisbett y Ross, 1980), it should be controlled by formal reasoning.
- The sources of bias were many and stemmed from the judge, but the context effect i.e., case type cannot be discarded.
- The sources of bias, in the case of cognitive bias, result from the judge's cognitive limitations or, in the case of motivational bias, from a tendency to sustain beliefs that serve the individual's needs and desires of what is presumed to constitute largely irrational tendencies (Kruglanski & Azjen, 1983).
- It appears that judges rely on bias and heuristics to "drive the verdict".

In terms of professional practice, this study highlights the need to establish strategies designed to counteract the incidence of bias in judicial judgement-making. Thus, as a first step, efforts should be undertaken to raise the judge's awareness of bias to curve this metacognitive deficit, which is linked to informal reasoning (Perkins, 1989), as well as providing tools designed to optimise judgement-making. Finally, in relation to the daily legal practice of lawyers, two trial tactics may be drawn. First, by exploiting sources of bias to drive a verdict; for example, when lawyers are faced with anchorage which is contrary to their interests, they may offer a multiplicity of anchorage points as an alternative anchorage strategy (Plous, 1993) designed to counter the initial bias driving a verdict (see Fariña & Arce, 1997 for a review of strategies). Second, aware that judges employ qualitatively different ways of judging, lawyers may strengthen the evidence in line with their interests by controlling informal reasoning. For example, if a judge introduces legal

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reasoning through the law of precedence and jurisprudence, the lawyer should further exploit this. On the other hand, if legal reasoning rests on legal references, lawyers should focus on them and avoid the law of precedence and jurisprudence.

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