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JUDICIAL JUDGEMENT-MAKING AND LEGAL CRITERIA OF TESTIMONIAL CREDIBILITY

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Abstract

Judicial judgement-making in legal and forensic settings is characterised by the information-loss model. In comparison to formal reasoning styles, in which information is processed in detail, judicial reasoning styles are mainly informal. Moreover, the experimental literature regarding judges and juries has revealed that reliability is the corner stone of legal judgement-making in legal contexts. This study aims to assess the underlying legal criteria assigned to the credibility of testimonies by judges by evaluating the court archives of judicial judgements in which the verdict rested entirely on the credibility of testimonies. Moreover, given the prevalence of informal reasoning in this context, an analysis was undertaken to determine the use of heuristics which are indicative of informal reasoning. In addition, an analysis of the interaction of both variables and their effect on joint decision-making by legal experts and lay people was assessed. Finally, bearing in mind the limitations of this study, the results are discussed in terms of their implications in the evaluation of testimonial credibility in judicial proceedings.

Keywords: credibility, judicial judgment-making, testimony, heuristics, sentences.

Resumen

La formación de juicios en la tarea judicial se ajusta a un modelo de sujeto perdedor de información. Frente a un estilo de razonamiento formal, en el que toda la información es tratada con exactitud, los estilos de razonamiento judiciales se han revelado como mayoritariamente informales. Por otro lado, la literatura experimental, tanto en jueces como en jurados, ha puesto de manifiesto que la fiabilidad es la pieza central en la formación de juicios en el contexto legal. En este trabajo, con el fin de conocer los substratos de los criterios legales de asignación de credibilidad a los testimonios por parte de jueces y magistrados, nos hemos planteado un estudio de archivo con sentencias judiciales, en las que la decisión descansa únicamente en la credibilidad del testimonio. Además, dado que este contexto es especialmente propicio para un razonamiento informal, llevamos a cabo un análisis en busca de heurísticos que son un indicador de razonamiento informal. Complementariamente, hemos analizado la interacción de ambas variables y sus efectos en el juicio conformado. Finalmente, teniendo en cuenta las limitaciones de este trabajo, se discuten las implicaciones más relevantes sobre la evaluación de la credibilidad para la práctica judicial y forense.

Palabras clave: credibilidad, decisiones judiciales, testimonio, heurísticos, sentencias judiciales.

Introduction

Judicial judgement-making in legal context is immersed in contradictory evidence and testimonies on the basis of which a judge reaches a categorical decision i.e., a guilty or not guilty verdict and, in the case of the former, imposes a sentence as prescribed by law (Article 120 of the Spanish Constitution). Since judges must rest their decision on the interpretation of events they have not personally witnessed they are compelled to make inferences which are presumably objective. Thus, legal judgement-making should be driven by formal reasoning that would exclude the possibility of defining a judgement as inaccurate. Notwithstanding, this assumption is invalid for human reasoning. In judicial judgement-making this would imply inter-judge consistency in reaching judgements yet research has systematically revealed the disparity in judgement-making (e.g., Arce, Fariña, & Fraga, 2000; Diamond, 1981; Fariña, Arce, & Novo, 2002, 2003; Mustard, 2001; Sobral & Prieto, 1994). The legal system itself contemplates this possibility by providing courts of appeal. The analysis of judicial styles of reasoning has revealed that the most involve informal reasoning (i.e., Arce, Fariña, & Novo, 2004; Guthrie, Rachlinski, & Wistrich, 2001). A second possibility for objective inferences would be through direct verification which is impossible in judicial judgement-making (as an alternative, judges occasionally carry out a reconstruction of the events in order to directly verify plausibility or consistency). Consequently, judicial judgements are exposed to informal reasoning in which the objective parameters for inferences are replaced by the perception of the decision maker. In short, the judgements of judges are well characterized by the information-loss model (Fitzmaurice & Pease, 1986; Saks & Kidd, 1986).

Though several models have been proposed to describe the mechanisms underlying legal judgement-making i.e., the information processing styles on which inferences rest, the *Information Integration Models* (Kaplan, 1975, 1977; Kaplan, Steindorf, & Iervolino, 1978; Moore & Gamp, 1995) have been the most functional. According to these models, a judgement is an evaluation of a fact or object in one particular dimension. As such judgements are based on a set of beliefs concerning the event to be judged that may be relevant to the dimension to be evaluated, and are salient at the moment of judgement. However, not all beliefs are equally weighted in a particular judgement. The impact or weight of an item of information is closely connected to the reliability and validity

assigned to the evidence. Reliability in the court room is influenced by factors such as: witness credibility, logical consistency of the evidence or the probability of the incident or the order of events whereas validity relies on the relevance of a particular fragment of knowledge regarding the issue under judgement. The combined judicial judgement-making model, that presumes a mathematical inference style, is substituted by an information-maximizing process style in line with combined judicial judgement-making and the minimization of discrepancies (Arce, Fariña, Novo, & Seijo, 2001). The assignation of credibility, the dimension of reliability in the model, rests on criteria classified as empirical, that is, criteria that have a scientific underpinning which is considered to be neglected by laypeople; and social i.e., taken-for-granted knowledge of the world. Moreover, besides legal criteria, the scientific literature on legal judgement-making has revealed that judges resort to criteria primarily reliant on social judgements rather than on empirical criteria (Arce, Fariña, & Novo, 2008; Arce, Fariña, & Seijo, 2005; Ekman & O'Sullivan, 1989; Hines et al., 2010; Vrij, 2008; Vrij, Edward, & Bull, 2001).

In order to assess the underlying legal criteria employed by judges for assigning credibility to a testimony an archive study of judicial judgements resting entirely on the credibility of testimonies was undertaken. Moreover, given that this particular type of context is prone to informal reasoning, an analysis designed to detect heuristics, which are an indicator of informal reasoning, was carried out. In addition, an analysis of the interaction of both variables and their effects on mixed judicial judgement-making was carried out.

Method

Protocols

Judicial judgements of criminal cases resting entirely on the credibility of testimonies due to the lack material evidence were selected from the Aranzadi database. The search term was “credibility”, and all of the cases that did not rest on proven facts were eliminated. Following the second screening procedure, a total of 100 judicial judgements from 1998 to 2007 were randomly selected. In terms of case type, 91 were sexual offences (24 sexual abuses, 63 sexual assaults, and 4 rapes); 3 attempted homicide, 2 kidnapping, 1 attempted fraud, 1 threatening behaviour, 1 GBH, and 1 domestic violence. In 35% of the cases the offence was committed against a minor.

Analysis of the protocols

The analysis of the protocols was designed to identify underlying heuristics in the descriptions of judgements. A modified version of Ross' taxonomy (1977) was used as a framework given that heuristics should limit themselves to processes and explain the behaviour of others, and not only explain interpretations of one's own behaviour. The following categories were registered (Ross, 1977): effective control; belief in a just world; fundamental attribution error; presumed covariation; anchoring; attribution of intention; attribution of disposition; selective attention; salience and availability; subjective evaluation; and false consensus. Moreover, given the specific nature of our context, some categories were further subdivided to ensure mutual exclusion (e.g., though fundamental attribution and salience error are often grouped together, in this study they appear as separate entries). Furthermore, through successive approximations, encoders were able to establish categories for "undefined" heuristic i.e., heuristics that did not fall into any of the established categories. Thus, encoders detected the presence of four heuristic strategies that did not correspond to any of the previous categories: a) "inference based unspecified knowledge", in which an inference was based on the decision maker's personal experiences, common sense or taken for granted knowledge that is foreign to legal judgement-making and has not been substantiated in court by experts; b) "attribution of intention" an inference of the effects of an action which are presumed to be deliberately perused by an agent, but is of a transitory nature; c) "attribution of disposition" linked to the attribution of effects of an action to a stable characteristic (trait) of the actor; and d) "subjective evaluation" a biased evaluation derived from the decision maker's own set of values which are presumed to be universal.

The aim of the content analysis was to assess the criteria of testimonial credibility employed by judges in legal judgement-making. The content analysis categories were drawn from the general categories established by the Judgement of the Spanish Supreme Court (Criminal Division), of 28 September 1988, RJ 7070. These are as follows: "absence of subjective incredibility", "plausibility" and "persistence". A further two credibility categories were identified using a procedure of successive approximations i.e., testimony and witness variables (stemming from the right to give evidence before a judge, the right to oral testimony, and the right to contest a testimony) as well as trial variables. As for the analysis of the material, the general categories were

observed to contain subcategories that influenced the interpretation of credibility. Consequently, the material was analysed and different subcategories were identified. The final analysis of all the protocols included the category “others”, in line with the strategy of successive approximations.

The final specification of these categories was based on the guidelines proposed by Anguera (1990) to ensure a reliable and valid mutually exclusive categorical system which has been referred to by Weick (1985) as a methodic system of categories. The unit of analysis was the judgement. All of the categories were encoded in terms of the presence or absence of criteria influencing the judgement of credibility.

Reliability

A trained encoder and another with previous experience analyzed the categories of the heuristic strategies, the credibility criteria, and 50% of the protocols respectively. In order to assess intra-judges consistency, 20% of the protocols were encoded a second time less than a week after the first encoding. Likewise, each encoder analysed 20% of the other encoder's protocols to assess inter-encoder consistency.

Encodings were considered concordant if they were above the IC cut-off score [agreements/agreements+disagreements] $\geq .80$ (Tversky, 1977), which is more restrictive than the Kappa values. The results obtained indicate that the encodings of heuristic strategies and credibility criteria were reliable with indices above .80. Moreover, inter- and intra-encoder consistency was extensive i.e., between encoders and through time.

Results

When judicial judgements based on the credibility of the accused and/or the plaintiff's testimonies, the probability of a guilty verdict (64%) was significantly greater, $\chi^2(1, N = 100) = 7.84, p < .01$, than a not guilty verdict; and credibility criteria, $t(94.5) = 0.87, ns$, were required for both a not guilty verdict ($M = 6.81$) or a guilty verdict ($M = 7.58$). Nevertheless, the valence of the credibility criteria was practically uniform and consistent with the verdict. Thus, criteria interpreted as favourable for the accused ($M = 7.19$) predominated $t(40.1) = 11.23, p < .001$, in not guilty verdicts in contrast to guilty verdicts ($M = 0.31$), whereas the criteria contrary to the accused ($M =$

7.92) predominated in guilty verdicts as opposed to not guilty verdicts ($M = 0.55$). Hence, judges resort to credibility criteria both for not guilty and guilty verdicts, forming sets of practically uniform interpretations in line with the verdict reached i.e., legal judgement-making admits almost no discrepancy between the interpretation of the criteria considered to be either favourable or unfavourable to the accused.

Absence of subjective incredibility

The category of assigned credibility “absence of subjective incredibility” had a significant incidence in the motivation of the judicial judgement, in which credibility was pivotal in determining the verdict. In fact, all of the verdicts were grounded on testimonial credibility i.e., on the basis of the existence or not of a motivation that undermines a testimony of the ability to generate a subjective state of doubt. In terms of the verdict, no significant interaction was observed between “absence of subjective incredibility” and verdict, $\chi^2(1, N = 100) = 0.12, ns, \phi = .036$. The number of verdicts driven by the credibility category “absence of subjective incredibility”, was significantly high, and was not systematically linked to the verdict. Consequently, the subcategories pertaining to this general category were analyzed. The results of the content analysis and the register of the subcategories of subjective incredibility revealed that the subcategories “previous relationship between plaintiff and accused”; “financial gain of the plaintiff”; “animosity, revenge or resentment”; and the “spontaneity in the accusation”, were significantly reflected in judicial decision-making (see Table 1), and these subcategories were analyzed.

Previous relationship between plaintiff and accused

The previous relationship between the plaintiff and the accused was not linked to verdict outcome, $\chi^2(1, N = 51) = 1.34, ns, \phi = .208$. That is, the previous relationship between the plaintiff and the accused can serve to justify either acquittal or conviction. Apparently, the directionality of the criteria was linked to the valence conferred to the previous relationship. The absence of a previous relationship between defendant and plaintiff led to an 80% of acquittals whilst the existence of a previous relationship was not significant $\chi^2(1, N = 41) = 1.97, ns$, that is, acquittal or conviction was 39% and 61%, respectively.

Table 1. Subcategories of the general criteria for absence of subjective incredibility.

Subcategories	Frequency	Z	p
Previous relationship*	52	21.56	.001
Animosity, revenge or resentment *	47	19.26	.001
Spontaneity**	11	2.75	.01
Financial gain**	10	2.29	.05
Delayed accusations*	25	9.17	.001
Others**	10	2.29	.05

Note. * Contrast value in Z was 0.5, that is, half of the number of judgements; ** The contrast value in Z is the conventionally accepted statistical significance level of 0.05; thus, if a criteria affecting subjective incredibility exceeded the critical value in the Table for a 0.05 probability level, it indicated its presence in the judgement was greater than statistical random probability. All the registers that were practically insignificant i.e., frequencies of 1 to 2, were assigned to the subcategory “others”.

Animosity, revenge or resentment

The defendant’s allegations of animosity, revenge or resentment (observed in 47% of the verdicts) were beneficial to the defendant $\chi^2(1, N = 47) = 31.16, p < .001, \phi = .652$. In other words, allegations of animosity, revenge or resentment as the underlying motives of the accusation was associated to 93.8% of acquittals. Conversely, unsubstantiated allegations led to 93.5% of guilty verdicts.

Spontaneity in the accusation

Spontaneity in the accusation in contrast to accusations by third parties (e.g., relatives or close friends), was not a frequent decision criteria (11%), but this subcategory significantly discriminated between testimonial credibility and incredibility, $\chi^2(1, N = 11) = 3.93, p < .05, \phi = .629$. Succinctly, a plaintiff’s spontaneous accusation led to a 100% guilty verdict rate whereas the conviction rate dropped to 25% when the accusation was brought forth by a third party.

Financial gain

The absence or not of the plaintiff’s financial gain, which is estimated to be around 10% of verdicts, did not influence verdict outcome, $\chi^2(1, N = 10) = 1.28, ns, \phi = .522$. Thus, it was equally weighted as an indicator of credibility or incredibility.

Delayed accusations

The lapse in time between the offence and the reporting of it to the police by friends or relatives or seeking hospital assistance did not influence the verdict outcome $\chi^2(1, N = 25) = 0.0, ns, \phi = .100$.

Table 2. Subcategories of the general criteria for plausibility.

Subcategories	Frequency	Z	p
Medical report of physical injury	63	26.61	.001
Forensic evidence	18	5.96	.001
Psychological report on defendant's credibility	1	---	---
Psychological report on plaintiff's credibility	32	12.39	.001
Psychological report on witness's credibility	0	---	---
Psychological report on defendant's characteristics	3	---	---
Psychological report on plaintiff's characteristics	18	5.96	.001
Psychological report on witness's characteristics	0	---	---
Report on psychological injury	24	8.72	.001
Circumstances in which the events occur	40	16.05	.001
Peripheral circumstances defendant's behaviour	22	7.79	.001
Peripheral circumstances plaintiff's behaviour	34	13.3	.001
Witness testimony concerning the defendant	24	8.72	.001
Witness testimony concerning the plaintiff	51	21.1	.001

Note. The contrast value was the conventionally accepted level of significance (.05).

Plausibility

Though the plausibility of a testimony, which is the corner stone of all judicial decision-making as it mediates 100% of judicial judgements, was not related to the verdict, $\chi^2(1, N = 100) = 0.0, ns, \phi = .042$, a detailed analysis of the subcategories revealed that some of the subcategories were significantly associated to verdict outcome. Of the 14 subcategories of plausibility, 10 had a significant presence in the evaluation of credibility and on the verdict (see Table 2). We shall proceed to evaluate each in turn.

Medical report on physical injury

Forensic medical reports confirming physical injury lead to a 72.7% conviction rate whereas medical reports of no physical injury lead to a 63.2% of acquittals which reveals a statistically significant difference, $\chi^2(1, N = 63) = 5.8, p < .05, \phi = .339$.

Forensic evidence

Forensic evidence establishing the defendant's presence in the scene of the crime did not lend support to the veracity of an accusation, $\chi^2(1, N = 18) = 0.0$, *ns*, $\phi = .014$.

Psychological report on the plaintiff's credibility

The psychological report on the credibility of the plaintiff's testimony significantly influenced the degree of plausibility, $\chi^2(1, N = 32) = 7.62$, $p < .01$, $\phi = .683$. Reports substantiating the credibility of the plaintiff's testimony led to a 93.3% guilty verdict rate whilst reports that did not support the credibility of a plaintiff's testimony led to a 100% not guilty rate.

Reports on the psychological disorders of the plaintiff

Reports on the psychological disorders of the plaintiff impaired or invalidated a testimony leading to 77.8% of acquittals, $\chi^2(1, N = 18) = 5.56$, $p < .05$.

Report of psychological trauma

A guilty verdict was reached in 80% of cases where forensic reports confirmed the psychological trauma of the victim $\chi^2(1, N = 20) = 7.2$, $p < .01$. In contrast, the number of guilty verdicts fell to 50% when psychological trauma was not substantiated $\chi^2(1, N = 24) = 0.4$, *ns*, $\phi = .258$.

Circumstances in which the events occur

The circumstances in which the events occur did not appear to influence the verdict, $\chi^2(1, N = 40) = 0.0$, *ns*, $\phi = .041$.

Circumstantial evidence in relation to the defendant's behaviour

When the circumstantial evidence corroborated the defendant's testimony, $\chi^2(1, N = 34) = 8.79$, $p < .01$, $\phi = .736$, defendants were exonerated in 100% of cases; conversely, when circumstantial evidence contradicted the defendant's testimony the conviction rate rose to 81.3%.

Circumstantial evidence in relation to the plaintiff's behaviour

When the circumstantial evidence corroborated the plaintiff's testimony, $\chi^2(1, N = 34) = 11.99, p < .001, \phi = .653$, defendants were exonerated in 87.5% of cases whereas when circumstantial evidence contradict the plaintiff's testimony the conviction rate was 22.2% of cases.

Table 3. Subcategories of the general criteria of "consistency of incriminating evidence".

Subcategories	Frequency	Z	p
Consistent defendant's testimony	20	6.88	.001
Consistent plaintiff's testimony	59	24.77	.001
Consistent witness testimony	5	---	---
Key contradictions of the defendant	1	---	---
Key contradictions of the plaintiff	14	4.12	.001
Key contradictions of the witness	1	---	---
Minor contradictions of the defendant	0	---	---
Minor contradictions of the plaintiff	13	3.66	.001
Minor contradictions of the witness	0	---	---
Introduction of new data by the defendant	1	---	---
Introduction of new data by the plaintiff	2	---	---
Introduction of new data by the witness	0	---	---
Coherent testimony of the defendant	2	---	---
Coherent testimony of the plaintiff	21	7.33	.001
Coherent testimony of the witness	0	---	---

Note. The contrast value was the conventionally accepted level of significance (.05).

Witness testimonies concerning the defendant's testimony

Witness testimonies that contradicted or corroborated the defendant's testimony were significantly related to the verdict reached, $\chi^2(1, N = 24) = 0.89, ns, \phi = .319$. Thus, witness testimonies that corroborated the defendant's testimony led to a 90.9% acquittal rate whereas witness testimonies that contradicted the defendant's testimony led to 100% conviction rate, $\chi^2(1, N = 34) = 15.78, p < .001, \phi = .916$.

Witness testimonies concerning the plaintiff's testimony

Witness testimonies that contradicted or corroborated plaintiff's testimony had a significant effect on verdict outcome, $\chi^2(1, N = 51) = 15.59, p < .001, \phi = .597$. Succinctly, witness testimonies corroborating the plaintiff's testimony led to a 77.8% conviction rate whereas testimonies contradicting the plaintiff led to a 13.3% acquittal rate.

The consistency of incriminating evidence

The consistency of incrimination evidence was not linked to verdict outcome $\chi^2(1, N = 100) = 0.0, ns, \phi = -.026$. Given that there was no systematic association between the consistency of incriminating evidence and verdict outcome, a detailed analysis of the subcategories of the consistency of incriminating evidence was undertaken to determine its prevalence and directionality in terms of verdict outcome.

Consistency of the defendant's testimony

The results reveal that the lack of consistency in the defendant's testimony led to an 83.3% conviction rate whereas consistent testimony led to an 87.5% acquittal rate, $\chi^2(1, N = 20) = 7.08, p < .01, \phi = .572$.

Consistency of the plaintiff's testimony

The results reveal that the lack of consistency in the plaintiff's testimony led to a 72.4% acquittal rate whereas consistency in the plaintiff's testimony led to an 80% conviction rate i.e., a significant difference of $\chi^2(1, N = 59) = 14.28, p < .001, \phi = .465$.

Contradictions in key elements of the plaintiff's testimony

Plaintiff's testimony containing contradictions in key facts led to 80% of defendants being exonerated whereas the absence of contradictions led to an 88.9% conviction rate, a statistically significant difference of $\chi^2(1, N = 14) = 3.98, p < .05, \phi = .567$.

Contradictions in peripheral elements in the plaintiff's testimony

Contradictions in peripheral elements in the plaintiff's testimony was significantly associated to conviction in 76.9% of cases, $\chi^2(1, N = 13) = 3.8, p < .05$.

Internal coherence of the plaintiff's testimony

The results show that the lack of internal coherence in the plaintiff's testimony led to a 100% acquittal rate whereas coherent testimonies led to an 83.3% conviction rate, $\chi^2(1, N = 21) = 5.14, p < .05, \phi = .542$.

Testimony and witness variables

Testimony and witness variables were: the right to give evidence before a judge, the right to oral testimony, and the right to contest a testimony. These variables ascribed credibility to testimonies in 51% of judgements, $Z(N = 100) = 0.2$, ns^1 , and 66.7% of guilty verdicts $\chi^2(1, N = 51) = 5.67$, $p < .05$.

Table 4. Subcategories of the testimony and witness variables.

Subcategories	Frequency	Z	p
Clarity defendant's testimony	1	---	---
Clarity plaintiff's testimony	14	4.12	.001
Clarity witness's testimony	2	---	---
Scope defendant's testimony	1	---	---
Scope plaintiff's testimony	10	2.29	.05
Scope witness's testimony	2	---	---
Hiding/omitting facts defendant	1	---	---
Hiding/omitting facts plaintiff	13	3.66	.001
Hiding/omitting facts witness	1	---	---
Expression of emotions by defendant	1	---	---
Expression of emotions by plaintiff	3	---	---
Expression emotions by witness	0	---	---
Confidence in the defendant's testimony	6	0.45	ns
Confidence in the plaintiff's testimony	21	7.34	.001
Confidence in the witness's testimony	5	0	ns

Note. The contrast value was the conventionally accepted level of significance (.05).

Clarity of the plaintiff's testimony

The clarity of the plaintiff's testimony, that is, without vagueness or generalities, was significantly related to verdict outcome, $\chi^2(1, N = 14) = 3.15$, $p < .07$, $\phi = .535$. That is, 100% of plaintiff's testimonies considered to be clear resulted in conviction whereas 57.1% of testimonies considered as confusing or lacking clarity led to acquittal.

Detail and scope of the plaintiff's testimony

A detailed and descriptive plaintiff's testimony was significantly related to conviction, $\chi^2(1, N = 10) = 5.81$, $p < .05$, $\phi = .707$. Thus, 100% of testimonies considered to be detailed and descriptive resulted in conviction whereas 100% of testimonies lacking detail or description led to acquittal.

¹ A 0.5 cut-off score was established to determine the relevance of the presence or absence of this category, that is, more, equal or less than 50%.

The withholding or omission of facts on the part of the plaintiff

Plaintiffs were not observed to withhold or omit facts, and this factor was not significantly linked to the judicial outcome, $\chi^2(1, N = 13) = 0.69, ns$.

Plaintiff's confidence during the testimony

The plaintiff's confidence while giving testimony as determined by the judge i.e., the plaintiff's confidence, resolve, and conviction during the declaration versus the lack of confidence i.e., uncertainty and vacillation, had no significant impact on verdict outcome, $\chi^2(1, N = 21) = 2.79, ns, \phi = .446$.

Variables of the trial proceedings

The variables of the trial proceedings mediating credibility were observed in 58% of the cases, $Z(N = 100) = 1.6, ns^2$. There was no significant relationship with verdict outcome, $\chi^2(1, N = 58) = 1.72, ns$. The subcategories had a significant impact on the gauging of credibility (see Table 5).

Table 5. Subcategories of the trial proceeding variables.

Subcategories	Frequency	Z	p
Errors in trial proceedings	11	4.12	.001
Lack of incriminating evidence	18	5.96	.001
Procedural safeguards	36	14.22	.001
The defendant's admission of guilt	21	2.29	.05

Note. The contrast value was the conventionally accepted level of significance (.05).

Errors in trial proceedings

Errors in trial proceedings were not related to verdict outcome, $\chi^2(1, N = 11) = 0.9, ns$.

Lack of incriminating evidence

In 66.7% of cases the lack of incriminating evidence led to exoneration $\chi^2(1, N = 18) = 5.56, p < .05$.

² A 0.5 cut-off score was established to determine the relevance of the presence or absence of this category, that is, more, equal or less than 50%.

Procedural safeguards

The explicit mention of procedural safeguards in the judgement was not significantly related to the judgement, $\chi^2(1, N = 36) = 2.78, ns$.

The defendant's admission of guilt

Contrary to expectation, the defendant's admission of guilt was significantly associated to conviction, $\chi^2(1, N = 21) = 0.71, ns, \phi = .195$.

Table 6. Analysis of the prevalence of heuristics in the evaluation of testimonial credibility.

Heuristic	Frequency	Z	p
Representativity	8	1.4	ns
Saliency and availability	51	21.1	.001
Attribution of intention	77	33	.001
Attribution of disposition	9	1.8	ns
Preconceptions	57	23.9	.001
Inference based on unspecified knowledge	63	26.6	.001
Self-protection and self-enhancement	25	9.2	.001
False consensus	31	11.9	.001
Belief in a just world	20	6.9	.001
Subjective evaluation	92	39.9	.001
Anchoring	53	22	.001

Heuristics

A total of 486 heuristics were detected in the judgements i.e., an average of 5 per judgement. Of the heuristics observed, the following had a significant prevalence (that is, a probability greater than the statistical margin of error .05) saliency and availability, attribution of intention, preconceptions, inference based on unspecified knowledge, self-protection and self-enhancement, false consensus, belief in a just world, subjective evaluation and anchoring (see Table 6). Likewise, the heuristics of anchoring and self-protection and self-enhancement were associated to guilty verdicts (see Table 7). In short, judicial judgements based on the credibility of the plaintiff's or defendant's testimony systematically contained heuristics that mediated legal judgement-making, and two of these, anchoring, and self-protection and self-enhancement, biased judgements towards a guilty verdict.

Table 7. Analysis of the relationship between heuristics and verdict.

Heuristic	χ^2	p	%_{GVP}	%_{GVA}	ϕ
Saliency and availability	0.00	ns	64.7	63.3	.015
Attribution of intention	0.01	ns	64.9	60.9	.036
Preconceptions	0.00	ns	63.2	65.1	.020
Inference based on unspecified knowledge	0.00	ns	63.5	64.9	.014
Self-protection and self-enhancement	9.78	.01	92	54.7	.337
False consensus	2.72	ns	77.4	58	.187
Belief in a just world	1.98	ns	80	60	.167
Subjective evaluation	0.23	ns	62.5	50	.086
Anchoring	15.99	.001	100	42.6	.421

Note. %_{GVP}= Percentage of guilty verdicts in the presence of the heuristic; %_{GVA}= Percentage of convictions in the absence of the heuristic.

Analysis of the interaction between the criteria of credibility, heuristics and verdict

Bearing in mind the above findings, the interaction between the criteria of credibility, verdict outcome, and significant heuristics (i.e., self-protection and self-enhancement, and anchoring), which were associated to guilty verdicts, was analyzed. The results of this interaction in the presence of anchoring, in which only guilty verdicts were observed, revealed a significant prevalence ($> .05$, see Z values in Table 8) of the following credibility criteria: “admission of the facts by the defendant” (see for interpretation χ^2 in Table 8: it made no difference whether the defendant admitted the facts), “forensic medical report on physical injury” (corroborating physical injury); “psychological report on the plaintiff’s credibility” (substantiating credibility); “report on the plaintiff’s psychological characteristics” (dismissing psychological problems affecting a the plaintiff’s credibility); “report on psychological trauma arising from the events” (reports of trauma); “clarity in the plaintiff’s declaration” (regardless as to whether it is clear, vague or is generalised, undefined or confused); “scope of the plaintiff’s testimony” (abundance of detail, descriptive); “testimonies of witnesses related to the plaintiff” (corroborating the plaintiff’s version); “consistency in the defendant’s testimony” (not consistent); “consistency in the plaintiff’s testimony” (consistency); “contradictions in key elements of the plaintiff’s testimony (no contradictions); “contradictions in peripheral elements of the plaintiff’s testimony” (with contradictions); “coherence in the plaintiff’s testimony” (internally coherent testimony); “animosity, revenge or resentment” (these elements were not observed in the accusation); and “spontaneity in the accusation” (it was irrelevant if the accusation was spontaneous or not).

Table 8. Prevalence and valence of the credibility criteria in the presence of Anchoring.

Criteria de credibility	n	p_{ca}	Z	p	%_{AG}	χ²	p
Lack of relevant evidence	5	.094	1.5	ns	0	---	---
Admission of guilt by the defendant	12	.226	5.9	.001	50	0	1
Physical injury	36	.679	21	.001	83.3	17.9	.001
Report on plaintiff's credibility	18	.34	9.7	.001	100	---	---
Report on plaintiff's psycho characteristics	11	.208	5.3	.001	100	---	---
Report on psychological injury	16	.302	8.4	.001	81.3	8.1	.01
Testimonies of the plaintiff	28	.528	16	.001	92.9	23.1	.001
Clarity plaintiff's testimony	8	.151	3.4	.01	75	2	.157
Scope plaintiff's testimony	6	.113	2.1	.05	100	---	---
Consistency defendant's testimony	10	.189	4.6	.001	10	6.4	.05
Consistency plaintiff's testimony	28	.528	16	.001	78.6	9.1	.01
Key contradictions of the plaintiff	9	.17	4	.001	11.1	5.4	.05
Minor contradictions of the plaintiff	8	.151	3.4	.01	100	---	---
Coherent plaintiff's testimony	13	.245	6.5	.001	100	---	---
Animosity, revenge or resentment	23	.434	1.8	.001	4.3	19.2	.001
Spontaneity	6	.113	2.1	.05	66.7	1.8	.180

Note. *n* = number de cases in credibility criteria were observed; *p*_{ca}= Observed probability of cases with the criteria credibility in the presence of Anchoring (*N* = 53). %_{AG}= Percentage of cases where the criteria of credibility was observed in the presence of Anchoring (*N* = 53) to support guilty verdicts. In presence of Anchoring only guilty verdicts were registered.

The heuristics self-protection and self-enhancement in the presence of guilty verdicts revealed a significant prevalence (>.05, see *Z* values in Table 8) of the following credibility criteria: “lack of relevant evidence” (see for interpretation χ² in Table 9: systematic interpretation of the evidence in guilty verdicts: no lack of evidence); “admission of the facts by the accused” (it was irrelevant whether the defendant admitted or not to the facts), “forensic medical report on physical injury” (it was irrelevant whether the reports corroborated or not physical injury); “psychological report on the plaintiff's credibility” (corroborating credibility); “report on the psychological trauma sustained” (it was irrelevant whether the report confirmed trauma or not); “report on the plaintiff psychological characteristics” (dismissed psychological disorders affecting the plaintiff's credibility); “witness testimonies related to the plaintiff” (corroborating the plaintiff's version); “consistency in the defendant's testimony” (the consistency or not of the defendant's testimony was irrelevant); “consistency of the plaintiff's testimony” (the consistency or not of the plaintiff's testimony was irrelevant); “coherence of the plaintiff's testimony” (the testimony was internally coherent); and “animosity, revenge or resentment” (these elements were not observed as motives of the accusation).

Table 9. Prevalence and valence of the credibility criteria in the presence of Anchoring of self-protection and self-enhancement in guilty verdicts.

Credibility criteria	n	p_{cepg}	Z	p	%	χ²	p
Lack of relevant evidence	4	.16	2.5	.05	100	---	---
Admission of guilt by the defendant	4	.16	2.5	.05	25	1	.317
Physical injury	11	.44	8.9	.001	72.7	2.3	.132
Report on plaintiff's credibility	9	.36	7.1	.001	100	---	---
Report on psycho characteristics of plaintiff	6	.24	4.4	.001	100	---	---
Report psychological injuries	7	.28	5.3	.001	85.7	3.6	.059
Testimonies of the plaintiff	12	.48	9.9	.001	91.7	8.3	.01
Clarity plaintiff's testimony	3	.12	1.6	ns	100	---	---
Scope plaintiff's testimony	3	.12	1.6	ns	100	---	---
Consistency defendant's testimony	4	.16	2.5	.05	25	1	.317
Consistency plaintiff's testimony	11	.44	8.9	.001	72.5	2.3	.132
Key contradictions of the plaintiff	3	.12	1.6	ns	0	---	---
Minor contradictions of the plaintiff	3	.12	1.6	ns	100	---	---
Coherent plaintiff's testimony	7	.28	5.3	.001	100	---	---
Animosity, revenge or resentment	10	.40	8	.001	10	6.4	.05
Spontaneity	3	.12	1.6	ns	66.7	0.3	.564

Note. *n* = number of cases, among those in which the heuristic self-protection and self-enhancement was registered (*N* = 25), that the credibility criteria were observed; *p*_{cepg} = Probability of cases with the credibility criteria in the presence of self-protection and self-enhancement and guilty verdicts; %_{AG} = Percentage of cases where the criteria of credibility was observed in the presence of self-protection and self-enhancement (*N* = 25) to support guilty verdicts.

Discussion

The generalization of the results obtained in this study to the task of judicial judgement-making should be undertaken with caution, and the following limitations should be taken into account. First, in some comparisons the frequencies were so small that they may be mediating the significance of the results. Second, the study assumes, in accordance with the constitutional requirements compelling judges to motivate judicial judgements, to correlate all of the decisive criteria. Nevertheless, it is possible that criteria were not correlated as they may be latent and the decision maker is unaware of this. Third, the present study entails the limitations characteristic of archive studies (e.g., Diamond, 1981; Homel & Lawrence, 1992) underlining the need to repeat the study in order to maximize the reliability of the results and to contrast the robustness with other experimental methods.

Bearing in mind the previously mentioned limitations, the following conclusions may be drawn:

- a) *Information-processing model.* The results of this study reveal a cognitive processing by judges characterised by the loss of information often associated to heuristics. Moreover, the findings support a model of judges' judgement-making based on the integration of information. Thus, judges appear to evaluate the credibility of a testimony, among other dimensions, in accordance to reliability (e.g., scope, clarity, etc) and the validity of the testimony (e.g., consistency, contradictions, etc). Nevertheless, the judges' information processing model may be more complex in nature if one considers other dimensions and variables that influence trial proceedings and in turn judicial judgement-making.
- b) *Reasoning styles.* Judges are often driven by informal reasoning in reaching their judgements in cases where the verdict rested entirely on the credibility of a testimony whose main characteristic was the use of heuristics. Informal reasoning, as opposed to optimum reasoning i.e., formal or statistical reasoning, implies bias and in turn errors; consequently, it should be controlled or mitigated. In other words, the lack of objective criteria on which to base a judgement i.e., cases that rely primarily on the credibility of testimonies, are fertile ground for informal reasoning though legal decision-making should be grounded in formal reasoning.
- c) *The utility of heuristics.* Bias underlying judgement-making may be classified as either cognitive or motivational (Kruglanski & Azjen, 1983; Ross, 1977). Cognitive bias arises from the limitations of human beings in processing incoming information. These cognitive strategies focus attention on certain information and hypothesis, and reject other information or alternative hypothesis though they may be relevant to the task at hand (Nisbett & Ross, 1980). Cognitive bias observed in our study was: salience, availability, attribution of intention, preconceptions and anchoring. The effects of the latter in legal judgement-making have been extensively reported in the literature by several authors (Englich & Mussweiler, 2001, Goodman-Delahunty, 2006; Kreiner, 2009,) as well as in non-legal settings (Arvai, Campbell, Baird, & Rivers, 2004; Liu, 2008). As for motivational bias, it is characterized by a tendency to form and hold beliefs that fulfil the individual's needs i.e., those inferences that agree or are congruent with the individual's needs. The heuristics of self-protection and self-enhancement, false consensus, and belief in a just

world were motivational referents observed in the judgments that relied exclusively on the credibility of a testimony. Thus, judges resort to the use of heuristics in the evaluation of the credibility of a testimony in order to marry information processing with the judgement reached and to discard information which was inconsistent with the verdict in order to ensure the verdict cohered with judgement maker's beliefs and requirements.

- d) *Criteria*. Legal judgement-making in cases where the verdict rests exclusively on the credibility of a testimony, requires an array of criteria to attest or reject a verdict. Paradoxically, an equal number of criteria was required for conviction (7) as for exoneration (7). Moreover, it is worth noting that the relationship between the valence of the criteria and the verdict was not exclusively one-to-one, that is, criteria contrary to the judgement reached may be admitted.
- e) *Acquittals*. Acquittals, according to the classification of the Supreme Court of Spain (Criminal Division), 28 September 1988, RJ 7070, are grounded on the following criteria:
- The *absence of subjective incredibility* rested on the verification of animosity, revenge or resentment on the part of the plaintiff or in corroborating a non spontaneous accusation.
 - The peripheral objective corroboration of not guilty evidence (*plausibility*) rested on the absence of physical injury, a psychological report undermining the credibility of the plaintiff's testimony; a psychological report that revealed the existence of psychological disorders that diminished the plaintiff's credibility; circumstantial evidence corroborating the defendant's statement; circumstantial evidence that refuted the plaintiff statement; testimonies that corroborated the defendant's testimony; and testimonies that refuted the plaintiff's testimony.
 - The lack of *consistency in the testimony* in the defendant's testimony; lack of consistency in the plaintiff's accusation; contradictions in key elements of the plaintiff's testimony; and the lack of internal coherence in the plaintiff's testimony.
 - In addition to the legal decision criteria outlined in the judgement of the Supreme Court of Spain (Criminal Division), 28 September 1988, RJ

7070, acquittals were found to rest on undefined or confusing accusations, lacking scope (i.e., brief), and lacking evidence.

- f) *Convictions*. Convictions, on the other hand, rested on the following criteria:
- The *absence of subjective incredibility* rested on the confirmation of no evidence of animosity, revenge or resentment on behalf of the plaintiff and/or a spontaneous accusation.
 - The peripheral objective corroboration of guilty evidence (*plausibility*) rested on evidence of physical injury resulting from the crime, a psychological report confirming the credibility of the plaintiff's testimony; a psychological report certifying the plaintiff had sustained psychological injuries as a consequence of the crime; circumstantial evidence that refuted the defendant's testimony; circumstantial evidence that confirmed the plaintiff's testimony; testimonies that contradicted the defendant's testimony; and testimonies that ratified the plaintiff's testimony.
 - The lack of *consistent incriminating* testimony on behalf of the plaintiff; lack of consistency in key elements of the plaintiff's testimony; contradictions in peripheral elements of the plaintiff's testimony; and lack of internal coherence in the plaintiff's testimony.
 - In addition to the criteria for judgement-making outlined by the Supreme Court of Spain (Criminal Division), of 28 September 1988, RJ 7070, convictions rested on clear and extensive accusations, that is, neither ambiguous nor vague, but descriptive and detailed.
- g) *The reliability of the evidence: Social and empirical criteria in the evaluation of the credibility of the testimony*. Judges use in their evaluations of the credibility of testimonies empirical criteria to discriminate between real or false accounts (clarity and the scope of testimonies). Simultaneously, however, judges ignore a substantial amount of empirical criteria of reality (e.g., unstructured productions, admitting lack of memory, contextual embedding, unusual or superfluous details), and introduce in the evaluation of the testimonial credibility criteria that lack empirical support (e.g., expressions of emotions, confidence in the testimony).

- h) *The validity of the evidence.* The most conventional empirical systems for evaluating testimonial credibility i.e., Statement Reality Analysis (Undeutsch, 1988); Statement Validity Analysis (Steller & Boychuck, 1992); Criteria Based Content Analysis (Steller & Köhnken, 1989), and the Global Evaluation System (GES) (Arce & Fariña, 2005) begin with an evaluation of the validity of the evidence. Likewise, in judicial judgement-making judges were found to follow the same procedure. For this purpose they assess motives in line with the procedures undertaken in Statement Validity Analysis (SVA) and the Global Evaluation System as well as assessing the validity of the evidence itself using the analysis of the consistency of the evidence through time, internal consistency, consistency with other robust or unwavering evidence, the consistency of central and peripheral information, which is similar to the procedure followed by the GES. Nevertheless, the means of obtaining a statement under cross examination, limits the efficacy of the study of validity. In comparison with the GES, which is a psychological tool for undertaking a detailed study on the validity of the evidence (i.e., Fariña, Arce, & Sotelo, 2010), judges do not include an analysis of the scope of the evidence.
- i) *Procedural variables.* Judges included in the assessment of testimonial credibility procedural variables that were not directly attributed to the testimony itself.

Consequently, it appears that judges and forensic psychologists undertake different tasks in order to assess testimonial credibility. Thus, having previously assessed the validity of the evidence, forensic psychologists determine the reality of a testimony for psychological assessment and to fulfil the legal requirements of judgement-making. Judges, on the other hand, assess the validity of the evidence from a legal perspective, the underlying motives of the accusation, the consistency of the evidence, and the procedural variables prior to assessing criteria of reality. Notwithstanding, in this study the task undertaken by judges and forensic psychologists appears to be complementary given that judges rely and adhere to the forensic psychologists reports of testimonial credibility.

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