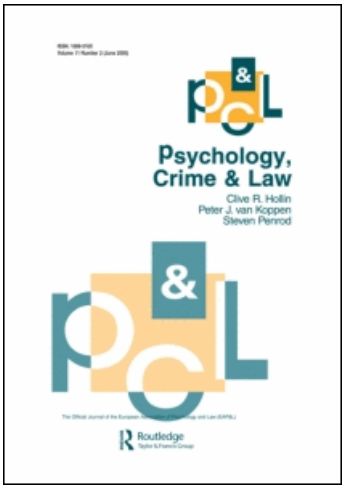

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Biased evaluation of incriminating and exonerating (non)evidence

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Recent evidence suggests that convictions in criminal procedures are susceptible to biased decision making. In this study, the potential detrimental effects of confirmation bias and the feature positive effect (FPE) were explored. The former states that decision-makers will be more impressed by incriminating than by exonerating evidence. The latter states that they assign more weight to finding evidence than to the failure to secure it, even though the absence of evidence can be as diagnostic as its presence. Law students read a case file about a fistfight. The evidence was manipulated such that the effect of confirmation bias and FPE on guilt estimation and conviction rate could be assessed. Findings partly confirmed the presence of both a confirmation bias and an FPE.

Keywords: confirmation bias; feature positive effect; rational decision making; forensic evidence

Introduction

Rational theory of decision making states that people examine information in an unbiased manner, and ultimately reach a well-balanced conclusion (see Evans, 2007). Unfortunately, however, various heuristics and biases hinder individuals in their pursuit of rational decision making (Tversky & Kahneman, 1986). A well-known example is confirmation bias, which refers to the tendency to confirm hypotheses instead of evaluating them critically. The tenacity of this bias is characterized as follows by Nickerson: 'if one were to attempt to identify a single problematic aspect of human reasoning that deserves attention above all others, the confirmation bias would have to be among the candidates for consideration' (Nickerson, 1998, p. 175).

There currently is some evidence that confirmation bias plays a role in legal decision making. That is, judges and jurors may be biased against the suspect, and this bias may fuel conviction rates. For example, police officers who are convinced that a suspect is lying, cannot easily be brought to change their mind (Meissner & Kassin, 2002). Similarly, jury members tend to interpret information in the light of their previously held convictions, rather than completely objectively (Carlson & Russo, 2001). Likewise, police officers find evidence more reliable if it is incriminating compared to when it is exonerating (Ask, Rebelius, & Granhag, 2008). In conclusion, the whole criminal procedure may promote tunnel vision against the suspect (Findley & Scott, 2006). For example, the law in some cases prohibits the defence to incriminate third parties, and thus, the possibility to introduce alternative scenarios is limited.

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A less known, but possibly equally crucial bias is the feature positive effect (FPE; Jenkins & Sainsbury, 1969). This effect was first discovered in research on conditioning. The FPE boils down to the fact that organisms learn associations more quickly if these pertain to the presence of two stimuli (e.g. if the blue light is on, the pigeon can obtain food by picking a certain peg, regardless of any other lights in the Skinner box), compared to when the to-be-learned association is one between the absence of one stimulus and the presence of another (e.g. if the blue light is out, the pigeon can obtain food, regardless of the status of any other lights). In short, if a stimulus is predicted by the presence of another stimulus (blue light on), organisms master this association more rapidly than if the stimulus is predicted by the absence of that same stimulus (blue light off). The FPE is not exclusive to laboratory settings, nor to animals. As to the latter, Newman, Wolff, and Hearst (1980) subjected undergraduate students to six experiments in which they were presented with a series of cards. Each card had four symbols. Students needed to guess whether a card was 'good' or 'not good' and had to use the given feedback to find the rule that predicts the 'goodness' of a card. Results showed that participants were unable to discover the rule that the absence of a particular symbol (e.g. a triangle) indicated which card was the 'good' one, whereas they readily discovered the rule when the presence of that particular symbol indicated a 'good' card. Across the experiments, there were differences in type of stimulus material, mode of presentation, kind of feedback delivered, length of post-feedback interval, type of response, details of instruction to the subject, and size and nature of the set of irrelevant elements. Nonetheless, a rather strong FPE was found in each of these experiments.

There is reason to argue that the FPE may affect legal decision making, in that, for example, lineup identifications of suspects are generally considered to be highly informative, whereas non-identifications are not (Wells & Lindsay, 1980). One explanation for this is that non-identifications are considered less diagnostic because there are multiple causes for a non-identification. Besides the logical conclusion that a non-identification is caused by the fact that the suspect is not the perpetrator, a non-identification might also be caused by memory failure or anxiety. However, similar alternative explanations can be put forth to account for positive identifications. In fact, using Bayesian statistical analysis, Wells and Lindsay convincingly argue that a non-identification is similarly diagnostic of the suspect's innocence as is an identification of his guilt. In their words: 'there is no justifiable logic for approaching a lineup procedure with a set for considering an identification of the suspect to be informative while considering a nonidentification to be uninformative' (p. 777; see also Clark, Howell, & Davey, 2008). Also more recently the effect of FPE on legal decision making has been studied (Jenkins & Schuller, 2007). In this study, participants read a case file about a drug-facilitated sexual assault. Some participants received a version in which a forensic report was included stating that no residues of drugs were found in the victim's blood. Others received a version with the same report, and an expert witness testimony saying that the negative forensic finding does not necessarily imply that the victim was not drugged. In the control condition, neither forensic report nor expert testimony was presented. Participants indicated among other things, the estimated guilt of the suspect as well as whether they would convict the suspect or not. Results showed that receiving only the negative report led to lower guilt and conviction rates compared to the control group. However, additional

inclusion of the expert testimony increased guilt estimates even compared to the control group, suggesting that the negative finding was quite easily compensated.

Confirmation bias and the FPE are related, but not identical. Particularly, confirmation bias refers to the tendency to confirm a favoured hypothesis and thus to ignore disconfirming information. The FPE, on the other hand, refers to the notion that people have difficulty evaluating the diagnosticity of the absence of information, regardless of which hypothesis the lacking information would have contributed. In the present study, we sought to examine the effects of confirmation bias and the FPE on the willingness to convict the suspect in a fictitious case. Undergraduate law students[1] read a case file pertaining to a fistfight. There was some evidence that the suspect had been involved in this fight. In addition, two variables were manipulated, creating four experimental groups. Some participants received a version of the case file in which extra evidence was presented. Others received a version stating that the police had tried to find extra evidence, but failed to do so. In a third version, the police had found extra information that in fact exonerated the suspect. In the final version, the police had done their best to find exonerating information, but could not find any.

If there were a confirmation bias, the search for extra incriminating evidence should have more impact than searching for exonerating information, regardless of whether the information was found or not. We assume that in this context, the suspect's guilt is the primary hypothesis, since the legal decision making process is aimed at answering a question of guilt and not a question of innocence (Findley & Scott, 2006). The FPE predicts that finding extra incriminating evidence or exonerating information should have a stronger impact than not finding extra incriminating evidence or exonerating information.

Method

Participants

One hundred and eighty-eight undergraduate law students (of which 128 women) participated in the current study. Their age ranged from 20 to 58 years, with a mean of 24.0 years (SD = 4.14). Participants received the case file during lectures and were randomly assigned to one of five conditions. In return for their participation they received extra course credits.

Measures and procedure

The case file was about a young man who was suspected of physically abusing another man. The stimulus material was based on de Keijser and van Koppen (2007). This case file included the official police report, several eyewitness testimonies, reports of the interrogations of the suspect, and reports of a photo line-up (approximately 22 pages in length). There were five different conditions: one control condition and four experimental conditions. Participants in the control condition received no further information. In the other four conditions, additional investigative endeavours by the police were mentioned, at the end of the file. In two conditions these additional investigations (clothes of the victim and his girlfriend were checked for fingerprints of the suspect, the victim was confronted with pictures of the suspect,

and an additional investigation of the neighbourhood in order to find more witnesses of the incident was carried out) were guilt confirming or incriminating. Additional investigations that had been conducted in the other two experimental conditions had an exonerating character. This means that these investigations were carried out in order to tackle incriminating evidence or to provide support for alternative scenarios. Here, it was investigated whether the protocol for the confrontation procedure contained flaws and whether the incriminating testimony of an eyewitness was prompted by an ulterior motive. Furthermore, the investigators had critically evaluated the behaviour of the victim at the time of the incident, given that the victim was unable to recall any information about what happened. The guilt confirming investigations were successful in one condition and unsuccessful in the other. The same holds for the additional exonerating investigations. These investigations were also successful in one condition and unsuccessful in another.

After reading the case file and the results of the three additional investigations, participants were asked to rate on a scale from 10 to 100% (with increments of 10) the likelihood of the suspect's guilt. Finally, participants had to indicate whether or not they would convict the suspect (*yes*/*no*).

Results

Table 1 displays the mean guilt estimates and the conviction rates in each condition. The data were analysed with a 2 (confirmation vs exoneration) $\times$ 2 (successful vs failed) ANOVA. The dependent variable was the guilt estimate expressed as difference from the mean guilt estimate in the control condition. Of primary interest in this analysis was the divergence from the mean in the control group (that is, the impact of the additional information on the guilt estimate), regardless of whether the divergence was positive of negative. This analysis yielded a significant main effect of confirmation bias ($F(1,148) = 9.68$, $p < 0.05$), a nearly significant main effect of the FPE ($F(1,148) = 3.24$, $p = 0.07$), and a significant interaction effect ($F(1,148) = 21.64$, $p < 0.01$, see Figure 1). These effects are primarily caused by the significant impact of guilt confirming information on guilt estimates (see superscripts shown in Table 1).

Table 1. Descriptive statistics regarding guilt estimates and conviction rates by condition ($N = 188$).

		Guilt estimates		
	n	*M*	SD	Conviction rates
Control group	36	68.33^{a}	19.78	$58.33^{a,b}$
Guilt confirmation	41	83.66^{b}	13.18	82.93^{c}
Failed guilt confirmation	38	66.84^{a}	20.68	$42.11^{a,b}$
Exoneration	38	63.42^{a}	16.15	31.58^{b}
Failed exoneration	35	70.86^{a}	12.92	$45.71^{a,b}$

Guilt estimates were given in percentages ranging from 10 to 100%. Conviction rates display the percentage of participants in a particular condition that would convict the suspect. Means in the same column that do not share superscripts differ at $p < 0.05$.

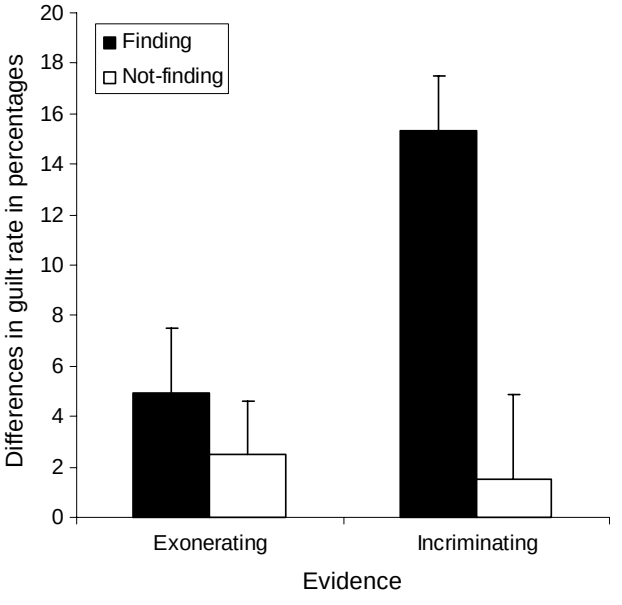

Figure 1. Mean absolute differences (+ *SE*) in guilt estimates of each condition as compared to the mean guilt rate in the control group.

As Table 1 shows, convictions rates differed between the experimental conditions ($\chi^2(4, 188) = 24.68$, $p < 0.01$). Participants in the control group were significantly less likely to convict the suspect than participants in the guilt-confirming condition ($\chi^2(1) = 5.68$, $p < 0.05$). Participants in the control group were more likely to convict the suspect than were participants in the exonerating condition ($\chi^2(1) = 5.36$, $p < 0.05$). Participants in the guilt-confirming condition were significantly more likely to convict the suspect than participants in the failed guilt-confirming condition ($\chi^2(1) = 16.13$, $p < 0.01$), the exonerating condition ($\chi^2(1) = 21.38$, $p < 0.01$) and the failed exonerating condition ($\chi^2(1) = 11.617$, $p < 0.01$).

A *t*-test for independent means showed that the guilt estimate of the 52.7% of participants who said they would convict the suspect was significant higher ($M = 82.0$, SD = 10.5) than that of participants who would not convict the suspect ($M = 58.4$, SD = 16.7; $t(145) = 11.44$, $p < 0.01$).

Discussion

Human decision making is affected by various heuristics, which sometimes results in bias (Tversky & Kahneman, 1986). This study investigated the influence of confirmation bias and the FPE on the willingness to convict a suspect in a fictitious case. Our results support the idea of a confirmation bias. This means that, whereas participants were already more convinced of the guilt of the suspect than of his innocence, presenting them with more incriminating evidence made the guilt rate increase more than did the presentation of more exonerating evidence decrease the suspects' guilt. This finding is in line with previous studies (e.g. Ask et al., 2008). However, recently, Snook and Cullen (2008) argued that tunnel vision is not

necessarily detrimental. In the words of these authors: 'policy recommendations to eliminate wrongful convictions by eradicating mental viruses are not based on any hard facts . . . Perhaps tunnel vision is used in every case, but only a very small percentage of these result in wrongful convictions' (p. 92). However, these authors define tunnel vision not only as confirmation bias, but as a compilation of confirmation bias, and decision making heuristics such as satisficing (Simon, 1955) and elimination by aspect. And whereas Snook and Cullen are right in arguing that the sensitivity and selectivity of tunnel vision for wrongful convictions is unknown, it can well be argued that confirmation bias in itself is undesired.

The data also suggest a striking asymmetry between the perceived diagnosticity of finding versus not finding evidence. That is, finding evidence, whether incriminating or exonerating, had more impact on guilt estimates than did not finding the same evidence. Hence, if the police try to find the suspect's fingerprints at the crime scene, actually finding them is more incriminating than not finding them is considered exonerating. This manifestation of the FPE represents a serious anti-suspect bias (see for a similar asymmetry in attribution of personality characteristics, Rothbart & Park, 1986).

The data with regard to the conviction rates seem to indicate quite rational decision making. That is, finding more incriminating evidence made the conviction rates increase, whereas this rate decreased when more exonerating evidence was found. These data provide no evidence for a confirmation bias or a FPE, whereas the data with respect to the guilt estimates did. Perhaps then, guilt estimates are more susceptible to bias than are actual conviction rates. It may well be that the two variables are only loosely coupled. In the light of this, it should be noted that there is no standard on how great the chance of guilt must be in order to convict the suspect. It is the judge's or juries prerogative to decide when reasonable doubt is excluded. From personal communications, we know that Dutch judges rarely use percentages as an aid to reach conclusions about the suspect's guilt at all. A case in point is that in the current study no fewer than 60% of the participants who would convict the suspect estimated the chance of guilt to be 80% or less. Such percentages can hardly be reconciled with safeguards against false convictions (see also MacCoun & Kerr, 1988; Tindale, Davis, Vollrath, Nagao, & Hinsz, 1990).

There are several limitations to the present study. First, it cannot be excluded that the incriminating and exonerating information in the stimulus materials differed in more ways than intended. For example, participants might have felt that the incriminating evidence was intrinsically stronger than the exonerating information. From a logical stance, it can be argued that proving one's guilt is difficult, but proving one's innocence is virtually impossible. One can only emphasize alternative scenarios that exclude the suspect's guilt. For instance, is establishing an unjust motive for giving an incriminating witness testimony equally strong exonerating evidence, as finding the suspect's fingerprints is incriminating? However, it should be noted that a pilot study established the equality of strength between incriminating and exonerating information used in the present study (Rassin, Eerland, & Kuijpers, unpublished manuscript).

Another limitation is the use of a control group as the gold standard for guilt estimation. We chose for this between-subjects design, but it may well be argued that a within-subject design, in which participants estimate the suspect's guilt at various times and with different information, is well fit to test our hypotheses.

One could easily argue that the use of law students as participants in this study is another limitation. Law students are trained in working on legal issues and might therefore be (to some extent) immune to biases in decision making. However, as mentioned before, the participants in this study were undergraduate law students. We assume that they do not have enough experience or skills yet to be able to ignore the cognitive biases investigated in this study. It is even questionable whether it is possible at all to ignore the confirmation bias and the FPE (see Eerland & Rassin, in preparation). On the other had, by relying on a sample of undergraduate law students, our data can be argued to say something about both professional and lay legal decision making. Thus, the data may well combine the best of both worlds.

An interesting topic for future research would be the effect of crime severity on the evaluation of the evidence. According to the so-called conviction paradox a more serious crime would increase participants' willingness to convict the suspect (de Keijser & van Koppen, 2007). On the other hand, it is also possible that the impact on the guilt and conviction rates would decrease by making the crime more serious. This is because people are aware of the fact that serious crimes lead to serious penalties. Another fruitful research topic is the way in which convictions develop (e.g. the influence of evidence order; Kerstholt & Jackson, 1998). Meanwhile, the present finding yields further support for the idea that legal decision making is not free from flaws that unduly promote conviction rates.

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Note

1. In the Netherlands, law is studied both at an undergraduate and graduate level.

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