



Original

## Contrast effect on the perception of the severity of a criminal offence

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### ARTICLE INFO

**Article history:**

Received 19 March 2015  
Accepted 19 February 2016  
Available online 8 April 2016

**Keywords:**

Contrast  
Perception  
Severity  
Criminal offence  
Cognitive bias

### ABSTRACT

All the participants (undergraduate students) were exposed sequentially (one by one) to 5 brief descriptions of different actions constituting criminal offences according to the Spanish Penal Code. Each description was accompanied by the specific name of the offence, and the range of the jail sentence length (in months) that might be imposed for the offence according to this penal code. The participants were asked to choose within this range a penalty for each case as a function of the severity that was perceived in the description of the facts. The participants in Group SEVERE were initially exposed to the descriptions of four relatively severe offences. The participants from Group MILD, however, were initially exposed to four less severe offences. The fifth offence to which the participants were exposed was the same in both groups—a description of a violent robbery. It was observed that participants in Group SEVERE imposed lighter penalties for the robbery with violence than participants in Group MILD. These results indicate that our perception of the severity of a criminal offence can be modulated by the severity of other actions to which we have previously been exposed.

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### El efecto de contraste en la percepción de la gravedad de un delito

#### RESUMEN

Todos los participantes (estudiantes universitarios de grado) fueron expuestos secuencialmente (de una en una) a 5 descripciones de diferentes hechos constitutivos de delito según el Código Penal Español. Cada descripción iba acompañada del nombre del delito y del rango de duración de la pena de cárcel (en meses) que debe ser impuesta según este código penal. Se les solicitó a los participantes que en función de la gravedad que percibiesen en cada uno de los 5 hechos descritos eligiesen una pena dentro de los rangos contemplados por la ley. Los participantes del grupo GRAVES fueron expuestos primero a las descripciones de cuatro delitos relativamente graves. Los participantes del grupo LEVES, sin embargo, fueron inicialmente expuestos a 4 delitos menos graves. El quinto delito al que los participantes fueron finalmente expuestos fue el mismo en los dos grupos, un delito de robo con fuerza. Se observó que los participantes del grupo GRAVES impusieron penas menos severas al delito de robo con fuerza que los participantes del grupo LEVES. Estos resultados indican que nuestra percepción de la gravedad de un delito puede verse modulada por la gravedad de otras acciones a las que hemos sido previamente expuestos.

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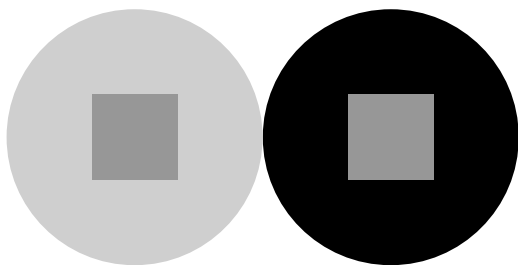
**Palabras clave:**

Contraste  
Percepción  
Gravedad  
Delito  
Sesgo cognitivo

Across the centuries, humans have attempted to make sense of the mechanisms that allow us to represent in our mind the aspects or objects of our real world surroundings. In other words, how do

we internalise this reality? Consider the following example: if there is enough light in my room, I “see” an object in front of me. And this experience of perceiving—“seeing” that object—seems to be immediate and automatic. I will also assume, without noticing, that the representation that my brain has created of that object is a reliable copy of the *real* object. This understanding of perception as an immediate process capable of generating in our mind an exact copy of reality is called *direct realism* or *naïve realism* (e.g., [Henle, 1974](#)).

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**Figure 1.** Example of a Sensorial Contrast Effect with Visual Stimuli.

*Note.* The effect consists of perceiving the square situated inside the circle on the left as darker than the square situated inside the circle on the right (although both squares are made of the same tone of grey).

Nevertheless, it has been shown from different fields (mainly Physiology and Psychology) that the representation of the world created by our mind does not have a direct equivalent in the “real” physical world. This is due primarily to a variety of physiological and psychological processes that mediate between the real object and the perceived one. We can find an example of this by examining what we perceive while looking at the image presented in [Figure 1](#).

Looking at this image we perceive two circles (a grey circle on the left and a black circle on the right) and the fact that each of those has a grey square inside. Moreover, there is a strong likelihood that we will perceive the grey square on the left to be darker than that on the right, although this perception does not correspond with reality—both squares are the same colour. The fact that the same physical stimulus (the percentage of light reflected by both squares) can generate two different perceptions (two different tones of grey) clearly shows that while the physical aspect does affect what we perceive, it does not always determine this perception. To be more specific, the perceptive illusion of the previous example is described as a *contrast* effect. In the example illustrated in [Figure 1](#), the perceived magnitude of an attribute of the squares (i.e., the darkness of their grey tone) depends on the greater or lesser presence of that attribute in the adjacent areas. There is a tendency to overestimate the darkness of the square on the left because its adjacent area is lighter (i.e., a positive contrast) and, concurrently, there is a tendency to underestimate the darkness of the square on the right because its adjacent area is darker (a negative contrast).

A relevant feature of this contrast effect is its generality. In particular, this effect is not only restricted to the visual domain, but can be found with sapid (e.g., [Bennett & Mackintosh, 1999](#); [Meiselman & Halpern, 1973](#)), tactile (e.g., [Rodríguez & Angulo, 2014](#)), auditory (e.g., [Trehub, 1973](#)), and emotional stimuli (e.g., [Rafaeli & Suttorm, 1991](#)), among others. This ubiquity indicates that the mechanisms involved in the effect are the result of a general way of processing information in the brain. But what is the reason for this style of processing? One answer lies in the fact that a major function of our brain is to make use of the enormous volume of incoming information that it receives in order to quickly make sense of the surrounding environment. In particular, the brain cannot analyse all this information in any great detail. Thus, rather than conducting precise computations on all of the data, it uses simple rules that help to make sense of reality. Of all the information available, our brain only analyses the parts that are indicated by these rules. For example, to estimate the magnitude of the characteristics of the surrounding stimulation (e.g., the grey tone of the squares in [Figure 1](#)), the brain only takes as a reference some values, usually the values of the closest stimuli (in the example in [Figure 1](#), the tone of the circular areas surrounding the square). In general, all of the simplifying mechanisms that help our brain to make sense of the surrounding stimulation are known as *heuristics*.

Although the use of heuristics usually allows us to rapidly make accurate estimations, it can at other times lead us to make some

mistakes. Given that these errors are due to the use of mechanisms or information processing strategies, they are systematic. That is, they occur in multiple situations and are committed by the majority of people, whether they are experts or naïve to the situation in which the decision is being made. Those mistakes that are a consequence of the use of heuristics are called *cognitive errors* or *cognitive biases* (e.g., [Kahneman, 2011](#); [Kahneman & Frederick, 2002](#); [Kahneman, Slovic, & Tversky, 1982](#); [Kahneman, Slovic, & Tversky, 1982](#))

The influence of heuristics on humans goes beyond perception. Our emotions, plans, decision-making processes, and behaviour are all dependent on our perceptions. Therefore, given that the use of heuristics can bias our perceptions, these biases can be present in any aspect of our lives. For example, the perceptions and decisions of judges, medical doctors, politicians, consumers, investors in the stock market, voters, etc. are based on heuristics and, therefore, are susceptible to the effects of cognitive errors (e.g., [Pohl, 2004](#)).

The objective of the present study is to contribute to a better understanding of the cognitive errors that can emerge in one such scenario, i.e., when perceiving the severity of criminal offences. We are all exposed to a number of criminal acts on a regular basis, with judicial agents (judges, lawyers, prosecutors, etc.) being exposed to a particularly high number of criminal acts during the course of their daily working lives. But, additionally, people who do not work in the judicial area are exposed to these types of acts, for example, by receiving information about these events in the local and mass media. The different consequences and nature of the variety of criminal acts will cause them to differ in their severity. Given that the contrast effect appears to be a general phenomenon, then it seems quite likely that the perception of the severity of a criminal act (the target crime) will be affected by the perceived severity of other criminal offences to which we have previously been exposed (the pre-exposed crimes). More specifically, a given action (the target) will be perceived as being more (or less) severe when it is presented in a context in which fewer (or more) severe actions have recently been encountered. Consider, for instance, a case in which two newspapers, A and B, include very similar information about a criminal act. In newspaper A, the information about that target crime is surrounded by information about more severe actions, whilst in newspaper B the information about the target is surrounded by information regarding much milder actions. A contrast effect would be demonstrated if the severity of the target crime was perceived to be greater by the readers of newspaper B in comparison with readers of newspaper A. We can also consider another instance in which two judges are exposed to very similar cases involving the same target crime. One of the judges has been pre-exposed (e.g., during the previous hearings that day) to criminal actions more severe than the target crime. The other judge however, has been pre-exposed to less severe crimes. If the perception of the severity of a criminal offence is a result of objective appreciations, both judges should perceive the target crime to be of the same severity and should impose the same penalty for the offence. However, if a contrast effect is also present in this type of situation, the judge pre-exposed to more severe crimes would perceive the target crime to be less severe than the judge pre-exposed to milder crimes. Using a sample of non-judicial participants (student volunteers), the present study will attempt to examine whether such a contrast effect can be found.

## Experiment

We made use of an experimental design with two groups (see [Table 1](#)). All of the participants (undergraduate students) were given a written description of five different acts constituting criminal offences according to the Spanish Penal Code (see [Appendix](#)).

**Table 1**  
Experimental Design.

| Group  | Previous criminal offences<br>Name (minimum-maximum<br>penalty in months)   | Target criminal offence                |
|--------|---|--|
| SEVERE | 1. Assault to authority (12-24)<br>2. Invasion of privacy that<br>affects sexual life (36-60)<br>3. Prostitution and under age<br>corruption (12-60)<br>4. Negligent homicide (12-48) | 5. Robbery with<br>violence<br>(12-36) |
| MILD   | 1. Wounding with intent (3-6)<br>2. Threatening behaviour (6-24)<br>3. Road safety crime (3-6)<br>4. Social safety crime (6-12)   | 5. Robbery with<br>violence<br>(12-36) |

Note. The name of each group (SEVERE vs. MILD) indicates the magnitude of the severity of the criminal offences to which the participants were exposed (criminal offences 1 to 4) before evaluating the target criminal offence (5-robbery with violence).

The description of each act was provided with the designated name of the offence (e.g., violent robbery) and the range of the jail sentence (in months) established by that penal code. All the participants (undergraduate students) were asked to read through each description of the facts, and then to choose the length of the jail sentence that they would impose within the established range. Specifically, participants had to choose one value among 7 alternatives. These alternatives were generated by dividing the established range of the jail sentence into 7 equal parts (e.g., an interval of 12–36 months was divided in 12, 16, 20, 24, 28, 32, and 36 months).

All the participants received the same description of facts relating to a robbery with violence. The variable manipulated was the severity of the criminal offences to which the participants had been previously exposed (see Table 1). The participants in Group SEVERE, were pre-exposed to relatively severe offences: *assault to authority*, *invasion of privacy that affects sexual life*, *prostitution and under age corruption*, and *negligent homicide*. In contrast, participants in Group MILD were pre-exposed to less severe offences than participants in Group SEVERE: *wounding with intent*, *threatening behaviour*, *road safety crime*, and *social safety crime*. According to the Spanish law, it is deemed appropriate that the nine criminal offences included in the study are to be judged by the same court. A contrast effect would be demonstrated by observing that the penalty imposed for the offence of robbery with violence is lighter (which would indicate that the crime had been perceived as less severe) for Group SEVERE than for Group MILD.

It is worth noting that the present design will allow us to detect whether the responses of the participants are affected by either a contrast effect or by another well-known cognitive bias known as *anchoring and adjustment* (e.g., Fariña, Arce, & Novo, 2002; Guthrie, Rachlinski, & Wistrich, 2000). Both the contrast and the anchoring effects are the result of making estimates by taking a particular subset of information as a reference. However, while contrast consists of a tendency to make the estimate far away from the reference value, anchoring tends to pull the estimate close to the reference or anchor (e.g., Keren & Teigen, 2004). The two groups of our experiment differ in the severity of the four criminal offences that are initially presented. Accordingly, the groups will also differ in terms of the magnitude of the sentences that they will have to apply for these actions, following what it is established by the Spanish Penal Code. Participants in Group SEVERE will have to choose between longer sentences (between 12 and 24 months, 36 and 60 months, 12 and 60 months, 12 and 48 months) than participants in Group MILD (between 3 and 6 months, 6 and 24 months, 3 and 6 months, 6 and 12 months). Thus, it might be the case that when required to estimate the severity of (and the prison sentence

for) the final target criminal offence, each group would use as anchors the higher (Group Severe) or lower (Group Mild) values to which they were previously exposed. If this sort of anchoring effect plays a role in their estimations, then Group SEVERE should impose longer sentences than Group MILD, which is contrary to what would be expected in terms of the presence of a contrast effect.

## Method

### Participants

The sample consisted of 152 students from the University of the Basque Country (UPV-EHU). All the participants signed a consent form. The participants were randomly assigned to one of the following groups: Group SEVERE ( $n=76$ , 62% female, mean age = 23.16 years,  $SD=5.08$ ) and Group MILD ( $n=76$ , 64% female, mean age = 24.12 years,  $SD=4.74$ ).

### Materials

Each participant received a 6-page dossier (see Appendix), the first page of which contained the instructions for the participants. It was explained that the Spanish Penal Code does not establish a single jail penalty for each criminal offence but it establishes a range of penalties (in terms of the length of the prison sentence) with a maximum and minimum value. It was also explained that it is the task of the judge to determine the exact value of the penalty for each particular case, depending on the nature of the facts being considered. Following this, the participants were told that they were going to find a description of several facts constituting criminal offences and that, depending on their perceived severity of the offences, they should choose, for each crime, the corresponding penalty that they would choose to impose (within the range provided by Spanish law). It was specifically pointed out that their answers would not be correct or incorrect.

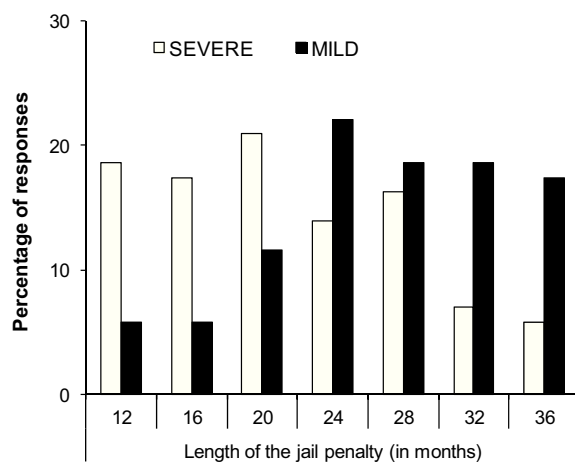
Each of the following pages of the dossier contained the constitutive facts of a criminal offence, its designated name according to the Spanish Penal Code, and a scale with the 7 values between which the range of the prison sentence for that criminal offence was divided. The participants in Group SEVERE were exposed, in order, to the following criminal offences: assault to authority (24 to 48 months in prison), invasion of privacy that affects sexual life (36 to 60 months in prison), prostitution and under age corruption (12 to 60 months in prison), negligent homicide (12 to 48 months in prison), and finally the target crime, robbery with violence (12 to 36 months in prison). The participants in Group MILD were exposed, in order, to the following criminal offences: wounding with intent (3 to 6 months in prison), threatening behaviour (6 to 24 months in prison), road safety crime (3 to 6 months in prison), social safety crime (6 to 12 months in prison), and finally to the target crime—robbery with violence (12 to 36 months in prison).

### Procedure

At the beginning of the experiment, the participants were asked to read through the instructions and were informed that there was no time limit to finish the task (although all the participants finished the task within a period of 10–15 min).

### Data Analysis

The chi-square test was used to assess the overall difference between the groups. Analyses of the adjusted residuals were used to determine if the choice of each prison sentence (12, 16, 20, 24, 28, 32, and 36 months) occurred more or less often in each group. Given that in all the analyses the alpha level was set at .05, a value



**Figure 2.** Percentage of imposed jail penalties (in months) for the target criminal offence (robbery with violence) depending on the severity of the preexposed criminal offences (Group SEVERE vs. Group MILD).

of an adjusted residual above 1.96 means that a particular choice occurred significantly more often, and a value below 1.96 means that it occurred less often.

## Results

Figure 2 shows the group mean values of the penalty imposed by the participants for the target crime (robbery with violence). It is clear that the participants that were exposed to more severe crimes before judging the target crime (Group SEVERE) imposed lighter sentences (from 12 to 16 months) and fewer harsh penalties (from 32 to 36 months) than those participants that were exposed to less severe crimes (Group MILD). A chi-square analysis performed on the data shown in the figure (in this and subsequent analyses the alpha level was set at .05) confirmed this effect of group,  $\chi^2(6) = 20.31, p < .001$ . Further analyses of the standardized adjusted residuals (res.) revealed that, compared with individuals in Group HARD, individuals in Group MILD were less prone to impose sentences of 12 (res. = -2.6) and 16 (res. = -2.4) months, and more prone to impose sentences of 32 (res. = 2.3), and 36 (res. = 2.4) months. No significant difference emerged for the other lengths of the penalty.

## Discussion

In the present study, the participants were asked to estimate the severity of a target criminal offence (robbery with violence) and to indicate the penalty that they would impose for this offence (choosing a prison sentence of between 12 and 36 months, as established by the Spanish Penal Code). We observed that the perceived severity of the target crime (as indicated by the magnitude of the chosen penalty) was modulated by the severity of 4 criminal offences that participants had judged immediately prior to this offence. Participants that were pre-exposed to more severe crimes perceived the target criminal offence to be of a lower severity than those participants that were pre-exposed to less severe crimes. The present results thus confirm our initial hypothesis. Exposure to descriptions of a series of criminal offences differing in severity can generate a contrast effect.

The present results thus add to a wide body of evidence indicating that the pieces of information that are first received in a given situation (in our study, the 4 pre-exposed criminal offences) are taken to construct a cognitive frame. This (not necessarily conscious) frame would serve as reference to interpret any other

information that is received later (in our study, the target criminal offence). This way of processing information may account for a variety of phenomena in addition to the contrast effect, such as in the case of the well-known anchoring effect. A good example of this effect within the judicial context is the observation that the length of passed sentences is biased (anchored) to the pleas from the prosecution that are presented in the first instance (i.e., before the pleas from the defence) during the court trials (e.g., Enescu & Khun, 2012; English, Mussweiler, & Strack, 2005; Fariña et al., 2002). This, however, raises the question of how the same mode of information processing can generate either contrast or anchoring effects. In answer to this question, we suggest that the resulting effect may depend on the nature or structure of the situation. For example, when an individual is required to make a unique judgement of a situation involving several pieces of information, anchoring will be more likely to occur. In these situations, taking the first piece of information as a reference will underestimate the later pieces of information, thus biasing the judgment towards the first information. However, in those other situations in which a different judgment is required for each piece of information (as in the case of the present study), contrast will be more likely to occur. In these cases, taking the first pieces of information as reference will bias the perception (and the judgments) of the information that is received later.

To conclude, the present results have several practical implications. For example, our perception of the severity of the crimes to which we are repeatedly exposed in the media will depend on the information that these media show us immediately before such an exposure. Another serious implication of the present results is related to the decision-making processes in a judicial context (e.g., Simon, 2004; Weinstein, 2002). Two people tried for similar charges could receive quite different penalties depending on the severity of the crimes heard by the corresponding judge during their previous recent cases. What remains, however, is the need to confirm the present findings in an experimental setting with judges (or law experts) as participants, and/or to also directly assess in courts whether or not the penalties imposed for the same criminal offences are modulated by the cases to which the judge has been previously exposed (i.e., in previous recent hearings).

## Conflict of Interest

The authors of this article declare no conflict of interest.

## Appendix. Instructions for Participants and Facts Constituting Criminal Offences Broken Down by Group and Case

### A.1. Group SEVERE

#### Instructions

The description of five different acts constituting criminal offences according to the Spanish Penal Code are detailed below. For each case, the designated name of the criminal offence and the range of the jail sentence (in months) established by that Penal Code is described.

The Penal Code does not establish a single jail penalty for each criminal offence (i.e., 16 months), but it determines a range of sentence lengths with a maximum and minimum value (i.e., 18 to 36 months). It is the task of the judge to determine the exact value of the penalty for each particular case, depending on the nature of the facts being considered. You have to read carefully the description of each case and choose the penalty, depending on your perceived severity of the criminal offence described. There are no correct

or incorrect answers for this task. Thank you very much for your collaboration.

#### A.1.1. CASE 1

Maitane is an 18-year old female. She meets up with her friends in a public area in Donostia-San Sebastián to have some drinks before heading towards a club. Since they are drinking in the streets with all drinks and glasses in sight, two policemen appear. The policemen ask them to take everything and to put it in the bin, as drinking in the streets is not allowed. Maitane refuses to throw the bottles in the bin, carries on drinking without moving, and verbally confronts the police. As a response, the policemen try to take the glass from her and throw the bottles into the bin themselves. She turns and punches and kicks the policemen. The two policemen finally subdue and arrest her.

*Criminal offence:* assault to authority.

*Penalty:* 24 to 48 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 24 months
- (b) 28 months
- (c) 32 months
- (d) 36 months
- (e) 40 months
- (f) 44 months
- (g) 48 months

#### A.1.2. CASE 2

Jon is a 19-year old man that goes out with his friends to have some drinks in a bar around the Antiguo area in Donostia-San Sebastian. He meets a girl called Paula and they start talking until she gives him her phone number. They start to chat and to date and one day he invites her to his house where they have consensual sexual intercourse. Jon records this activity with a hidden camera in his room without her knowledge and then shows the recordings to his friends on the following day.

*Criminal offence:* invasion of privacy that affects sexual life.

*Penalty:* 36 to 60 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 36 months
- (b) 40 months
- (c) 44 months
- (d) 48 months
- (e) 52 months
- (f) 56 months
- (g) 60 months

#### A.1.3. CASE 3

Magdalena is a 45-year old female with a 15-year old daughter called Lorena. Magdalena is a prostitute. During the evening she goes to different bars in the town centre to have drinks and offers her services to some of the clients in the bars. A few months ago she began to pressure her daughter into going out with her to these bars. In one bar, one of Magdalena's clients shows interest in Lorena. Magdalena asks Lorena to go with this person and to have sexual relations with him for money. Lorena agrees and Magdalena asks for the money afterwards. Magdalena has facilitated, favoured, and promoted her daughter as an underage (i.e., a minor, below the age of 18 years) prostitute.

*Criminal offence:* prostitution and underage corruption.

*Penalty:* 12 to 60 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 12 months
- (b) 20 months
- (c) 28 months
- (d) 36 months
- (e) 44 months
- (f) 52 months
- (g) 60 months

#### A.1.4. CASE 4

Blanca is a 27-year old young woman. She is driving one night at 23:30 h exceeding the speed limit (speeding at 94.35 km/h in an area with a 50 km/h speed limit). She causes the death of another person in a car in the Liberty Avenue in Donostia-San Sebastian. The cameras have recorded her skipping some traffic lights without stopping until she crashes into the vehicle being driven by Carlos, who dies later at the hospital.

*Criminal offence:* negligent homicide.

*Penalty:* 12 to 48 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 12 months
- (b) 18 months
- (c) 24 months
- (d) 30 months
- (e) 36 months
- (f) 42 months
- (g) 48 months

#### A.1.5. CASE 5

Carlos is a middle-aged man who breaks into a warehouse in Matias Street around 3 am after breaking the lock with a screwdriver and a spanner. Once he is inside, and knowing that the place is empty, he puts into a case some electronic material with a value of around 300 euros (15 mp3 players and 10 mobile phones). He leaves the warehouse after causing damage to the warehouse that will cost 1,000 euros to repair.

*Criminal offence:* robbery with violence.

*Penalty:* 12 to 36 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 12 months
- (b) 16 months
- (c) 20 months
- (d) 24 months
- (e) 28 months
- (f) 32 months
- (g) 36 months

### A.2. Group MILD

#### Instructions

The description of five different acts constituting criminal offences according to the Spanish Penal Code are detailed below. For each case, the designated name of the criminal offence and the range of the jail sentence (in months) established by that Penal Code are described.

The Penal Code does not establish a single jail penalty for each criminal offence (i.e., 16 months) but it determines a range of jail sentence lengths with a maximum and minimum value (i.e., 18 to 36 months). It is the task of the judge to determine the exact

value of the penalty for each particular case, depending on the nature of the facts being considered. You have to read carefully the description of each case and choose the penalty depending on your perceived severity of the criminal offence described. There are no correct or incorrect answers for this task. Thank you very much for your collaboration

#### A.2.1. CASE 1

Mikel is a 22-year old man that goes out to a club called Bataplan in Donostia-San Sebastian. Once in the club he bumps into Jon, throwing his drink to the floor, and this starts a fight that stops only when the club's security staff intervene. Later that night, they meet again outside on their way home and Mikel punches Jon several times causing him some injuries that need medical treatment, including surgery.

*Criminal offence:* wounding with intent

*Penalty:* 3 to 6 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 3 months
- (b) 3.5 months
- (c) 4 months
- (d) 4.5 months
- (e) 5 months
- (f) 5.5 months
- (g) 6 months

#### A.2.2. CASE 2

Guillermo and Maite have been partners for a few years. Maite has recently started working at night in a bar with young clients. She is friendly to the clients and keeps conversations with them. Her partner, Guillermo, beginning to be suspicious of Maite and thinking she is cheating on him, finally goes into the bar one night. When he gets to the bar, he finds her talking to a man called Isaac. He avoids being seen by Maite and waits for the man to leave the bar. When the man is outside, Guillermo threatens him by saying: "I'm going to break all your bones and I'm going to kill you, watch where you go because I will beat you when you do not expect it".

*Criminal offence:* threatening behaviour.

*Penalty:* 6 to 24 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 6 months
- (b) 9 months
- (c) 12 months
- (d) 15 months
- (e) 18 months
- (f) 21 months
- (g) 24 months

#### A.2.3. CASE 3

Antonio is a 54-year old man who, during a meal in a well-known restaurant in Donostia-San Sebastian, drinks wine, rum, and spirits. After this meal he drives to his house in Hondarribia. He finds a police alcohol check on the road and the breath tests reveal 0.70 mg/l of alcohol (exceeding the allowed rate). He is taken to the hospital for a blood test that reveals a level of over 1.20 g/l.

*Criminal offence:* road safety crime.

*Penalty:* 3 to 6 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 3 months
- (b) 3.5 months

- (c) 4 months
- (d) 4.5 months
- (e) 5 months
- (f) 5.5 months
- (g) 6 months

#### A.2.4. CASE 4

Andrea, Rocío, and Guillermo are three young people from Donostia, aged approximately 20 years. They go trekking around the Jaizkibel mountain in a spring afternoon. After a few minutes of walking they sit down to smoke a cigarette next to some bushes. Rocío starts to play with some dry leaves, setting fire to them. The leaves that are on fire fall into some bushes and they are also set alight. They stop the fire by beating it, before leaving. A few minutes later the fire ignites again due to the wind. A man that was nearby and saw their behaviour managed to extinguish the fire.

*Criminal offence:* social safety crime.

*Penalty:* 6 to 12 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 6 months
- (b) 7 months
- (c) 8 months
- (d) 9 months
- (e) 10 months
- (f) 11 months
- (g) 12 months

#### A.2.5. CASE 5

Carlos is a middle-aged male who breaks into a warehouse in Matias Street around 3 am after breaking the lock with a screwdriver and a spanner. Once he is inside, and knowing that the place is empty, he puts into a case some electronic material with a value of around 300 euros (15 mp3 players and 10 mobile phones). He leaves the warehouse after causing damage that will cost €1,000 to repair.

*Criminal offence:* robbery with violence.

*Penalty:* 12 to 36 months in prison.

Please, choose from the following options the penalty that you would impose for this criminal offence:

- (a) 12 months
- (b) 16 months
- (c) 20 months
- (d) 24 months
- (e) 28 months
- (f) 32 months
- (g) 36 months

## References

- Bennett, T. L., & Mackintosh, N. J. (1999). Comparison and contrast as a mechanism of perceptual learning? *The Quarterly Journal of Experimental Psychology*, 52B, 253–272.
- Enescu, R., & Kuhn, A. (2012). Serial Effects of Evidence on Legal Decision-Making. *The European Journal of Psychology Applied to Legal Context*, 4, 99–118.
- Englich, B., Mussweiler, T., & Strack, F. (2005). The last word in court—A hidden disadvantage for the defense. *Law and Human Behavior*, 29, 705–722.
- Fariña, F., Arce, R., & Novo, M. (2002). Heurístico de anclaje en las decisiones judiciales. *Psicothema*, 14, 39–46.
- Guthrie, C., Rachlinski, J. J., & Wistrich, A. J. (2000). Inside the judicial mind. *Cornell Law Review*, 86, 777–830.
- Henle, M. (1974). On naive realism. In R. MacLeod & H. Pick (Eds.), *Perception: Essays in honor of James J. Gibson* (pp. 40–56). Ithaca, NY: Cornell University Press.
- Kahneman, D. (2011). *Thinking, fast and slow*. New York, NY: Farrar, Straus and Giroux.
- Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.),

- Heuristics and Biases: The Psychology of Intuitive Judgment* (pp. 49–81). New York, NY: Cambridge University Press.
- Kahneman, D., Slovic, P., & Tversky, A. (Eds.). (1982). *Judgment under uncertainty: Heuristics and biases*. New York: Cambridge University Press.
- Keren, G., & Teigen, K. H. (2004). Yet another look at the heuristics and biases approach. In D. J. Khoeler & N. Harvey (Eds.), *Blackwell handbook of judgment and decision making* (pp. 89–109). Oxford: Blackwell.
- Meiselman, H. L., & Halpern, B. P. (1973). Enhancement of taste intensity through pulsatile stimulation. *Physiology and Behavior*, 11, 713–716.
- Pohl, R. (Ed.). (2004). *Cognitive illusions: A handbook on fallacies and biases in thinking, judgement and memory*. New York, NY: Psychology Press.
- Rafaeli, A., & Sutton, R. I. (1991). Emotional contrast strategies as means of social influence: Lessons from criminal interrogators and bill collectors. *Academy of Management Journal*, 34, 749–775.
- Rodríguez, G., & Angulo, R. (2014). Simultaneous stimulus preexposure enhances human tactile perceptual learning. *Psicológica*, 35, 139–148.
- Simon, D. (2004). A third view of the black box: Cognitive coherence in legal decision making. *The University of Chicago Law Review*, 511–586.
- Trehub, S. E. (1973). Infants' sensitivity to vowel and tonal contrasts. *Developmental Psychology*, 9, 91–96.
- Weinstein, I. (2002). Don't Believe Everything You Think: Cognitive Bias in Legal Decision Making. *Clinical Law Review*, 9, 783–834.