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Tejeiro, R, Alison, L, González, JL and Shortland, N (2023) 'Let's be careful out there': Maximization and core values predict action time in police decision making. *Personality and Individual Differences*, 215. ISSN 0191-8869

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Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

'Let's be careful out there': Maximization and core values predict action time in police decision making

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ARTICLE INFO

Keywords:

Maximization
Decision-making
Policing
Sacred values

ABSTRACT

This study tests the hypothesis that individual differences in trait maximization as well as in core personal values impact decision-making in dynamic and high-risk situations. 420 student-candidates at a Spanish police College (64.8 % male; 18 to 25 years) completed an online questionnaire that included maximization measures and core personal values. They then responded to three written vignettes that required dichotomous decisions (act vs. wait) under conditions of uncertainty. Multilevel modelling revealed that higher scores in maximization predicted a greater tendency to choose the action option later, but no differences were found in difficulty or perceived confidence. The tendency to wait was significantly higher among those who had wait-favouring core values; likewise, it was lower among those who had action-favouring core values. This study confirms the role of the trait maximization in the timeliness of decision-making, and illustrates the relationship between certain identified values, and decision making.

1. Introduction

Under conditions of uncertainty individuals are often forced to commit to courses of action that they are unsure will have the best, or even 'workable', outcome (Shortland et al., 2019). Whilst these types of situations occur in all walks of life, they are most associated with domains that involve high-stakes decisions under time pressure; namely military operations, critical incident response, and law enforcement (Alison et al., 2015). To date a host of research has explored the factors in these environments that impact decision-making (e.g., exogenous and endogenous uncertainty; van den Heuvel et al., 2012). However, there is a growing interest in the role of individual differences in decision-making in such situations, and recently, two different factors—the personality trait maximization, and the decision maker's 'sacred' values—have been separately proposed as key elements in the making of snap high-stake decisions under conditions of uncertainty. Our work integrates both concepts, whilst differing from previous studies by proposing scenarios in which waiting is not a sign of indecision but a conscious and considered decision by the participant.

1.1. Maximization in decision-making

The construct maximization is based on Simon's (1957) suggestion that, in most cases, our cognitive limitations prevent us from optimizing choices (maximizing) and we must limit ourselves to "satisfying" or evaluating options until we find one that is good enough. Building on Simon's work, Schwartz et al. (2002) argued that the tendency to maximize is a one-dimensional trait, with maximizing and satisficing being opposite ends of a continuum. Although various theoretical and methodological approaches to maximization have been suggested (see Cheek & Schwartz, 2016), in the last two decades numerous studies have evidenced its impact on decision-making. Maximization has been associated with higher reliance on normative principles than on intuition (Misuraca et al., 2021), rumination on the choice after it has been made (Kim, 2022), and procrastination (Shortland, Alison, & Thompson, 2020).

Consistent with findings that people tend to maximize more in the domains they value more (Zhu et al., 2022), there is a growing tendency to consider the impact of maximization in specific domains. However, to the best of our knowledge, Shortland, Thompson and Alison's (2020) is the only previous study addressing the role of maximization in decision-

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<https://doi.org/10.1016/j.paid.2023.112398>

Received 15 April 2023; Received in revised form 5 August 2023; Accepted 29 August 2023

Available online 5 September 2023

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making by the police. Using a sample of 96 British senior police officers, they found that higher maximization was associated with greater perceived difficulty of the decision, though decision-making speed was unaffected. They argued that this trait could, in some dynamic, high-stake, uncertain situations, lead to poor decision making insofar as delaying could lead to worse outcomes, whilst in others it may be entirely appropriate (since it may afford the decision maker more time to acquire information to ‘firm up’ exactly what one is dealing with).

1.2. ‘Sacred’ values

A second individual factor that is hypothesised to play a role in high-stake decision-making are values, or “abstract beliefs which serve as guidelines in peoples’ life and affect the way people and events are evaluated” (Kesberg & Keller, 2018, p. 1). Specifically it is theorized that the values a person holds will impact how they experience a decision and the course of action they are likely to favour (Tetlock, 2003). The influence of military values on decision-making in conditions of high-stakes and uncertainty was explored by Shortland et al. (2019), who used the concept of ‘sacred value’, or “any value that a moral community implicitly or explicitly treats as possessing infinite or transcendental significance that precludes comparisons, trade-offs, or indeed any other mingling with bounded or secular values” (Tetlock et al., 2000, p. 853). Shortland and Alison (2020) developed the theory of the collision of sacred values: when two equally ‘sacred’ values collide, the decision maker calculates that each outcome is intolerable and struggles to choose between them; however, in instances of a single sacred value, individuals are more readily able to commit to a choice of action because they refuse to trade-off against it. It should be noted that, whilst our research uses this definition of ‘sacred’ value, we adopted the term ‘core’ instead – as it is free of confusing religious connotations.

1.3. Hypotheses

Based on the literature, we hypothesised that (H1) people with higher scores in maximization, compared to people with lower scores, will consider decisions more difficult, perceive less self-confidence, and act later. Additionally, (H2) those who have core values that favour action will tend to act before those who do not have those core values; and (H3) those who have core values that favour waiting will tend to act later than those who do not have such core values.

2. Method

2.1. Participants

Our sample consisted of 420 members of the student body of the Guardia Civil “Duque de Ahumada” College in Valdemoro (Spain). Guardia Civil, which in 2020 had 78,469 active officers, is one of the two national Spanish police forces. Participants were selected opportunistically and contacted through their College to participate in a study with the aim of “understanding the factors that influence decision-making in police scenarios.” The inclusion criterion was to be an active member of Guardia Civil; no vulnerable person was accepted to participate. Roughly two-thirds of our sample was male ($n = 272$; 64.8 %), with ages 18 to 25 years (Mdn = 22, IQR = 3).

2.2. Procedure

The researchers obtained approval of their university’s ethics board, and the study was conducted in compliance with the 2013 Declaration of Helsinki (Seventh revision). An announcement was made by the College’s internal channels summarising the object and characteristics of the research, offering the researchers’ emails for further information, and inviting interested people to participate. Those interested were summoned to the school’s lecture theatre, where they completed their

participation on their mobile phones. The online survey was preceded by a welcome message, the participant information sheet, and the consent form. Participants who ticked the acceptance box in the latter were allowed to proceed to a survey which included self-reported gender and age, and psychometric tests (see below). They then completed three vignettes that involved decision-making under conditions of uncertainty (see below), followed by a short debriefing statement. Those who refused or failed to tick the acceptance box in the consent form were not allowed to access the survey; they were thanked for their time and excluded from the study. Participants needed about 30–35 min to complete the procedure.

2.3. Materials

2.3.1. Maximization

Maximization was measured with Dalal et al.’s (2015) MTS-7, a 7-item questionnaire with a 5-point Likert-type response format from 1 = completely disagree to 5 = completely agree. The scale includes statements such as “I will wait for the best option, no matter how long it takes.” The overall score is the result of the addition of the item scores. The authors reported a one-factor structure and a coefficient alpha of 0.82.

2.3.2. Core values

We took as main reference the 11 values identified by Shortland (2017) in his study on decision-making in military scenarios. In addition, we used the nine values described in the Guardia Civil Code of Conduct (Boletín Oficial del Estado (BOE), 2022). Unlike other police forces, Guardia Civil has a military character; it depends on the Ministry of the Interior for services, remuneration, destinations and resources, and the Ministry of Defense for promotions and missions of a military nature. Due to this double dependence, military principles and values inform the personal and professional guidelines of Guardia Civil (BOE, 2022).

The values in both sources were reviewed by the authors to remove overlap, better apply their contents to our sample and maintain the survey at a manageable length. Three subject matter experts (SMEs), Guardia Civil officers with teaching duties at the “Duque de Ahumada” College, confirmed that the selected values were meaningful to the Guardia Civil members. The final values were (1) maintain my honour, (2) act fairly and honestly, (3) be truthful to my colleagues and superiors, (4) avoid personal harm to myself, (5) avoid discrimination or unfair advantage, (6) put the common good before my own, (7) avoid blame for my actions, (8) protect the life of a civilian, (9) protect the life of a fellow guard, and (10) obey orders. Items were presented in a random order.

We asked participants to rate the extent to which they felt they should apply each value in their work, using a 5-point rating scale from “Always, regardless of the consequences” to “Sometimes, but I don’t care too much.” Previous research has divided values by their importance between ‘sacred’ and ‘secular’; a value was considered ‘sacred’ for an individual when its score was at least one standard deviation above the mean score for the other values (Shortland, 2017). However, the population in our study could be expected to present a skewed distribution of responses which would make it difficult to apply this criterion. Instead, we labelled a value as ‘core value’ (CV) when the individual assigned it the highest rating.

2.3.3. Decision-making task

DISPUTE (Decision-making Immersive Scenarios in Police Uncertain Tactical Environments) consists of three immersive desk-based vignettes that ask the individual to decide under conditions of uncertainty. The vignettes were developed through critical decision method interviews conducted with the SMEs, and they represent a sample of the population of situations that members of Guardia Civil encounter in their daily citizen security tasks. Vignettes represent a form of naturalistic research

with proven efficacy in the analysis of decision-making in critical settings and under uncertainty (e.g., Alison et al., 2015), and best practice in their design and implementation was followed (Barter & Renold, 2000).

In the vignettes, participants are presented with a first ‘page’ setting the scene, after which they are requested to press ‘next’ when they are happy that they understand the situation. In vignette 1, the text is: *In Arroyomolinos (Madrid) there is a high incidence of burglaries, which has generated great social alarm. The Madrid Command has established checkpoints at the accesses to the main residential areas, to dissuade and, where appropriate, intercept possible assailants or suspects. You are part of this service, and your orders are to remain at the entrance of the “Gaviota” estate from 10.30 pm to 11.30 pm; you should not abandon the position except in a serious emergency.*

The second screen adds a problem situation in that context, e.g. *At 10:45 pm, you receive a call from Central saying that an individual has phoned reporting that in the Shopping Centre, about 5 min from you by vehicle, there may be an altercation or quarrel because they have heard a lot of noise and shouting. The individual cannot give more details because he has not seen anything.* In this same page, participants are presented with a decision in the following terms: *Please decide your course of action: (1) go to the Shopping Centre; (2) remain in my current place and wait for more information.* After the participant has made a choice, a certain time unknown to him or her (about 30 s) elapses before the next screen is presented; the instructions inform participants that during this time they can change the selected option at any time. If the participant did not make any choice, or if the choice was action, they are sent to the questions of difficulty and confidence. Difficulty and confidence were measured with single items (“It was a difficult decision” and “I felt confident in my choice”, respectively) with a 5-point Likert-type response format from “complete disagree” to “completely agree”.

If the choice was to wait, participants are provided with additional information and are again asked to select between the same options, for example: *Central call again telling you that another individual has phoned reporting that noises such as firecrackers are heard inside the shopping centre as well as many shouts; she believes that it may be a group of kids who are celebrating the Madrid-Barça football match, which is being played, but she has not seen anything herself. Please decide your course of action (...).*

The cycle is repeated once more, with an additional piece of information being added after approximately 30 s to those who chose wait; e.g.: *You receive a call on your personal mobile phone: a friend of yours who works at the Shopping Centre tells you that they are hearing very loud bangs and that there may be a fire or similar, because many people are running around and everyone is very nervous. Please decide your course of action (...).* After this second piece of additional information, all participants wait about 30 s regardless of their choice and are then transferred to the difficulty and confidence questions, followed by the next vignette.

The second vignette presents participants with the following situation: whilst on duty at a yacht club during a yellow alert for gusts of wind and strong waves, they are informed that a young person has fallen to the sea and the rescue services may arrive too late; they are challenged to jump to the water and try to rescue the person. In the third vignette, participants attend a call on possible domestic violence, but it is unclear whether the report is correct; the house’s door is ajar, and nobody answers their calls; they must decide whether (and when) to enter.

According to the agreed criterion of the three SMEs, the most appropriate moment for the participants to select the action option is after the second (last) piece of information in vignettes 1 and 3; in vignette 2, the most appropriate answer is always wait, given the details known by the participants. It should be noted that to prevent the exercise from being a mere memory test, the scenarios were designed in such a way that they could not be answered in a normative way, that is, by resorting to laws, regulations, or manuals. Furthermore, we designed scenarios where the ‘gut’ response is always to act, and waiting requires a conscious exercise of self-control and re-evaluation (as participants can change their mind at any point after choosing to wait).

The screen where each participant chose the ‘action’ option in each scenario was coded as action time, with values ranging from 1 to 3. The added code +3 was applied to those who had not chosen the ‘action’ option when the third screen was closed.

2.4. Analysis

The statistical package SPSS version 28 was used for data analysis. These included descriptive statistics of general performance and analyses of psychometric tools. Multilevel modelling (MLM) was used to test the effect of each independent variable on decision making whilst controlling for the other variables. This is a fully crossed design where each participant receives the same vignettes; for this reason, the multilevel models were fitted with random intercepts for participants and vignettes, accounting for between-vignette heterogeneity and intra-responder correlation. We discarded a nested design because it is most appropriate when each participant receives a unique set of vignettes or when the dimensions defining the vignettes exhaust the variability in the vignette universe (Baguley et al., 2022). Normality was analysed using the Kolmogorov-Smirnov tests, given the large sample size; all variables showed a non-normal distribution ($p > .001$).

2.5. Data availability statement

This study’s data are available on request from the corresponding author. The data are not publicly available due to the restrictions in the Organic Law 3/2018, of December 5, on Protection of Personal Data and Guarantee of Digital Rights Law (Spain).

3. Results

3.1. Descriptive statistics

3.1.1. Overall performance

On average, participants rated the vignettes as medium difficulty ($Mdn = 3$, $IQR = 2$) and felt high confidence in their decision ($Mdn = 4.3$, $IQR = 1$). The highest percentages of identification as CVs corresponded to honour (80.2 %), justice (76.9 %) and protecting the life of a partner (74.0 %), whilst the values less identified as CVs were avoiding blame (6.7 %), avoiding self-harm (13.8 %), and obeying orders (17.6 %).

3.1.2. Action time

In 44.6 % of the vignettes, participants decided to act at the first decision point, in 21.9 % they acted at the second decision point, in 22.3 % they acted at the third decision point and in 11.3 % they had not decided to act when the third screen (decision point) closed; see [Table 1](#). According to the experts’ criteria, this implies that 68.7 % of the decisions were made too early and 23.4 % at the right time (an overall ‘too late’ percentage cannot be calculated because such option did not exist for vignette 2).

3.1.3. Maximization

Participants’ maximization scores ranged from 8 to 35 ($M = 25.22$, $SD = 4.09$; $Mdn = 25$, $IQR = 5$). The internal consistency of the MTS scale was acceptable for its length (Cronbach’s $\alpha = 0.73$) and it does

Table 1
Action time distribution.

Vignette	Action time			
	1	2	3	+3
1 ($n = 320$)	129 (40.3 %)	52 (16.3 %)	85 (26.6 %)	54 (16.9 %)
2 ($n = 354$)	244 (68.9 %)	52 (14.7 %)	23 (6.5 %)	35 (9.9 %)
3 ($n = 354$)	85 (24 %)	121 (34.2 %)	121 (34.2 %)	27 (7.6 %)
Total	458 (44.6 %)	225 (21.9 %)	229 (22.3 %)	116 (11.3 %)

not increase when any of the items is deleted. KMO was adequate at 0.78, and $p < .001$ in Bartlett's Test of Sphericity rejects the hypothesis that the correlation matrix is an identity matrix. An exploratory factor analysis with Principal Axis Factoring revealed a one-factor structure explaining 29.1 % of the variance, which exceeds the 20 % suggested by Reckase (1979) to accept one-dimensionality.

3.2. Data modelling

Vignettes 1 and 3 had three decision points each, whilst vignette 2 had four; to test the effect of the independent variables on 'action time', only the first three decision points in vignette 2 were used. For each dependent variable, the combination of three vignettes, three decision points per vignette, and 420 participants yielded 3780 data points; technical issues and early dropout resulted however in 3084 data points. For the multilevel regression, we considered that "avoid guilt" and "obey orders" favoured waiting for vignette 1, "avoid self-harm" for vignette 2 and "avoid guilt" for vignette 3. "Protecting the life of a civilian" was considered the only CV that favours earlier action. All other values were considered of minor or non-specific relevance for these vignettes. Table 2 shows the results of the MLMs.

Participants with higher maximization scores showed a greater tendency to choose the action later (to wait) than those with lower scores ($p = .018$). Women, compared to men, were more likely to report lower levels of confidence ($p < .001$), when the other variables are controlled. Participants who considered the protection of the life of civilians as a CV had a greater tendency to choose the action earlier ($p < .001$) and to consider the decision as less difficult ($p = .001$). Participants who possessed wait-favouring CVs showed longer action times ($p = .001$). None of the other relationships between variables reached statistical significance.

Table 2
Multilevel linear regressions with crossed-random effects.

DV	β	SE	p	OR (95 % CI)
(1) Action time ($n = 998$)				
Maximization	0.020	0.008	.018	1.020 (1.003, 1.036)
Age	0.037	0.020	.091	1.037 (0.994, 1.079)
Gender (female = 1)	-0.137	0.071	.058	0.872 (0.757, 1.005)
CV wait (yes = 1)	0.299	0.092	.001	1.299 (1.118, 1.480)
CV action (yes = 1)	-0.251	0.073	<.001	0.778 (0.674, 0.899)
(2) Perceived difficulty ($n = 830$)				
Maximization	0.008	0.009	.409	1.008 (0.989, 1.027)
Age	-0.009	0.026	.706	0.991 (0.962, 1.041)
Gender (female = 1)	0.051	0.084	.548	1.051 (0.890, 1.217)
CV wait (yes = 1)	-0.012	0.106	.910	0.988 (0.803, 1.195)
CV action (yes = 1)	-0.275	0.085	.001	0.760 (0.642, 0.899)
(3) Confidence ($n = 992$)				
Maximization	0.008	0.007	.259	1.008 (0.994, 1.023)
Age	-0.001	0.019	.956	0.999 (0.962, 1.037)
Gender (female = 1)	-0.297	0.064	<.001	0.743 (0.655, 0.843)
CV wait (yes = 1)	0.122	0.076	.111	1.122 (0.972, 1.271)
CV action (yes = 1)	0.009	0.065	.893	1.009 (0.888, 1.137)

4. Discussion

Our study sought to establish the role of individual differences in maximization and core values on decision-making in situations of high risk and uncertainty. We designed and applied the DISPUTE vignettes to a large sample of Guardia Civil students and invited them to complete the MTS-7 and ten items representing the values described in the Code of Conduct of Guardia Civil and the military values identified in the literature.

Our first hypothesis is partially supported: participants with higher maximization scores showed longer action times than those with lower scores, but no differences were found in either perceived difficulty or confidence. The result regarding waiting time is consistent with the evidence that maximizers spend more time making the decision (Iyengar et al., 2006) and tend to postpone it in order to seek more information (Parker et al., 2007). However, it is noteworthy that in our study waiting constitutes a conscious decision rather than indecision because participants must select the option to wait (rather than just take a longer time to act as in prior research; Shortland, Alison, & Thompson, 2020).

The fact that participants high in maximization did not show less confidence represents a difference with the literature, and evidence suggests that maximizers are more likely to be dissatisfied with their choices (Iyengar et al., 2006). It may be the case that, at least in certain decision scenarios, maximizers take longer in reaching the necessary threshold to decide – but the decision is eventually taken with the same confidence level.

Regarding decision difficulty, the literature tends to consider it as part of the concept of maximization (e.g., Schwartz et al., 2002), which makes it difficult to study the relationship between both constructs. Although the MTS-7 is free from this 'decision difficulty' component, a higher difficulty could still be expected among people with high maximization, because of this trait (Cheek & Goebel, 2020), or as a cause of it (Cheek & Schwartz, 2016). However, the relationship may differ across decision-making situations; for example, as Cheek and Goebel (2020) point out, "if there are only a few options, it may be relatively easy to identify the best one, and thus both maximizers and satisfiers will have an easy decision process" (p.8). This could explain the lack of relationship in our work: participants were asked to choose between two options with uncertain consequences, but clearly different and strongly influenced by the possession of CVs that favour action or wait.

It is important to mention that the MTS-7 was selected for our study for practical reasons and for comparison with the literature. This choice does not necessarily represent an endorsement of either the maximization model implicit in the tool or any of the many components identified by others, including desiring the best, high standards, alternative search, decision difficulty, satisfying, regret, minimizing, and the unwillingness to reduce standards (Mikkelsen & Ray, 2020).

It should be noted that, in our study, greater or lesser maximization was not necessarily associated with better or worse results. We found that people high in maximization showed a greater tendency to wait, but the appropriateness of acting immediately or waiting for more information depended on the specific scenario. In fact, the right moment to act in each scenario was identified by the experts drawing on information from professional learning and personal experiences, which opens a whole area of study and discussion beyond the scope of this paper.

The second and third hypotheses receive support. Those who have wait-favouring CVs tend to wait longer before making the decision to intervene, whilst those who have action-favour CVs tend to intervene earlier. This suggests that decisions in high-risk contexts may be directly explained from abstract values. This is consistent with previous studies that report that values affect people's calculations when they make decisions (Kruglanski & Stroebe, 2005). However, the literature shows that values are connected to a variety of specific beliefs, attitudes, and behaviours through complex cognitive structures (Schwartz, 1992), and in this sense it is possible that the study of their influence on behaviour will benefit from the integration of concepts of social psychology such as

behavioural intention (Fishbein & Ajzen, 2009), subjective norms, or self-efficacy (Sheeran, 2002), among others.

Our methodology does not allow us to adequately analyse indecision, and we chose not to include any variable that represented the simultaneous possession of action-favouring and wait-favouring core values. This prevents us from verifying Shortland and Alison's (2020) theory of the collision of sacred values. It would be interesting to check if there is a preponderance of some core values over others, that is, if they are all 'non-negotiable' to the same extent. Furthermore, our labelling of the 'core' values was merely speculative, and whether a given value favours wait or action was also a decision solely based on the experts' judgment. Future work should include a refinement of the measure of the structure of individual values.

The use of vignettes represents a further limitation – whilst they are a proven practical procedure for capturing important parts of the real-world decision-making process, they fail to fully capture all aspects of real life, and our participants may have acted differently in real situations. Finally, it is sensible to hypothesise some order effect of the materials in our study – asking about core values before the decision vignettes may have primed posterior answers. When the sample size allows it, a randomised pre-post design is another takeaway for future studies.

5. Conclusions

Identifying the factors that influence decision-making by police officers under time pressure and uncertainty is essential for public safety and for the well-being of the officers. It allows forces to optimize responses in such situations, reducing the number and cost of errors, and facilitates a better person-task fit in recruitment, selection, training, and promotions. This study contributes to further our understanding of those factors, evidencing the impact of the person's level of maximization as well as of their core values on their decision-making behaviour. With it, we move from the analysis of environmental factors that impact decision-making to understanding the internal and individual factors in the process.

The DISPUTE vignettes also represent a methodological improvement to existing frameworks, as they allow researchers to identify the 'right' answer according to expert judgment, regarding the trade-off of expeditious action vs accurate action. The research team is currently expanding DISPUTE to include more varied policing scenarios (e.g., border control, air support, counterterrorism) and more extreme and less obvious trade-offs (when even the experts disagree on the amount of information that opens and closes the always sought window of opportunity).

Ethics

The researchers obtained the approval of their university's ethics board. The study was conducted in compliance with the Declaration of Helsinki of 2013 (Seventh revision, 64th Meeting, Fortaleza) and the Spanish Organic Law 3/2018, of December 5, Protection of Personal Data and Guarantee of Digital Rights in accordance with the Regulation (EU) 2016/679 of the European Parliament and of the Council, of 27 April 2016. Participants did not receive any reward for participating in the study. The authors have no conflict interests.

CRedit authorship contribution statement

Ricardo Tejeiro: Conceptualization, Methodology, Formal analysis, Writing draft. **Laurence Alison:** Conceptualization, Methodology, Review and Editing. **José Luis González:** Investigation, Resources, Review and Editing. **Neil Shortland:** Review and Editing.

Declaration of competing interest

Ricardo Tejeiro has no conflict of interests.
Laurence Alison has no conflict of interests.
José Luis González has no conflict of interests.
Neil Shortland has no conflict of interests.

Data availability

Data will be made available on request.

Acknowledgements

The authors wish to express their gratitude to the “Duque de Ahumada” College's direction and staff for their support in data collection; to the Guardia Civil officers who acted as SMEs (Captain Daniel Calvelo-Vázquez, Lieutenant David Galán Ruíz-Poveda, and Lieutenant Beatriz Maestro-Pimentel); and to the student candidate Úrsula Da Silva, for her valuable contribution to the development of the vignettes.

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