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Conservation Officers' Perceptions of Their Working Conditions and Their Enforcement of Environmental Law in a Territory of High Environmental Protection

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Abstract: Environmental protection laws are useful tools for promoting sustainability by eradicating anti-environmental behavior while encouraging alternative sustainable behaviors. However, the achievement of these goals relies on the psychosocial processes underlying the behaviors of the people in charge of the enforcement of these laws. Conservation officers play a central role in the enforcement of these laws, but their intervention behavior has not been assessed in relation to their perceptions of their working conditions. To fill this gap, a questionnaire was developed and administered to 128 conservation officers from four public authorities responsible for enforcing environmental law in a territory with a high level of legal environmental protection. The main results show that the participants have similarities and differences with conservation officers from other territories in their perception of their working conditions. Likewise, it was found that self-efficacy and satisfaction influence their intervention behavior, both directly and through their goals. The role of descriptive social norms as well as the relation of collective efficacy and self-efficacy and satisfaction were also revealed. Policy implications of these findings involve the need to improve communication between prosecutors, judges and conservation officers, as well as the enhancement of conservation officers' collective efficacy, self-efficacy and skills used to educate people in avoiding damaging the environment and collaborating in its protection.

Keywords: conservation officers; environment protection officers; environmental law enforcement; protected area management; conservation policies; collective efficacy; self-efficacy; descriptive social norms



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1. Introduction

The global nature of environmental problems, their consequences and possible solutions are now a challenge for the survival of contemporary societies. Scientific evidence on ecological damage highlights the urgent need to reduce the environmental impact of human behavior. The concept of sustainability has emerged in an attempt to address such damage, and to ensure human well-being and survival by promoting improvements in three dimensions: environmental, economic and social [1]. The environmental dimension involves protecting the environment by pro-environmental behaviors such as recycling, minimizing product packaging, encouraging local production and reducing resource and energy consumption. The economic dimension consists of a conscious, long-term effort to care for personal economic well-being, combining voluntary simplicity [2], debt-free consumption [3] and collaborative consumption [4]. However, people do not subscribe to a sustainable lifestyle only for pro-environmental reasons or economic benefits. They do so out of a sense of social responsibility, based on a desire to minimize or eliminate the negative consequences of their own behavior, as well as the motivation to do something positive for others. These aspects are covered by the social dimension of sustainability [1].

Promoting sustainability requires actions in these three dimensions, in very diverse domains such as institutional, political, psychological or economic domains, among others. Legislation, and in particular, environmental protection laws, can be a useful tool for carrying out these actions. Laws specifically aimed at protecting the environment are intended to promote sustainability by eradicating anti-environmental behavior while encouraging the acquisition of alternative sustainable behaviors. Therefore, in order to promote sustainability, it is crucial to analyze the psychosocial processes that influence compliance, and not only the compliance with these laws [5–8], but also their effective implementation [9,10]. Research on law enforcement has focused almost exclusively on urban crime and the behavior of police officers. Professionals who deal with environmental laws have received less attention, not only because they are located in rural areas, but also because these laws are designed to protect nature (plants and animals) rather than humans [11–13].

Bellow we summarize the available evidence on conservation officers, followed by the justification of the aim and the hypotheses of the present study. Next, we describe the materials and methods used to collect the data and the results obtained. Special attention is given to the description of the study setting, in order to provide a context for interpreting the results and drawing proper conclusions. We then discuss the findings, differentiating between descriptive data and those derived from the structural equation model of COs' intervention behavior, as hypothesized at the end of this introduction. We also point out implications for policy, practice and/or programs, and highlight the limitations of the study, before reaching conclusions and making suggestions for future research.

1.1. Research into Conservation Officers

The professionals in charge of enforcing environmental protection laws go by a range of names, such as game wardens, forest rangers, gamekeepers, wilderness officers, wildlife officers, wildlife troopers, conservation agents, conservation officers and other like terms. Therefore, researchers have decided to use the generic term of conservation officers (COs) to refer to all of them [12,14]. COs usually engage in three types of activities: (1) active patrolling—consisting of continuously policing protected areas under their charge, to act as a physical deterrent to potential offenders; (2) passive observation—involving observation of a specific area or environment from a certain fixed location; and (3) investigative checks—focusing on thoroughly investigating any illegal activity after signs of such activity have been detected [15].

COs most frequently described in the research tend to encounter two types of difficulties in the performance of their everyday work. The first is that they are not only faced with environmental offenders, but also with common criminals (i.e., drug dealers, thieves, etc.), who carry out illicit activities in natural areas under protection. An increase in visitors to the national parks in recent decades [16] has involved higher rates of urban-associated street crimes in these areas. In this sense, COs' work may include alerting the relevant authorities and taking charge of the situation until these authorities arrive on the scene [17,18]. The second type of difficulty for COs is that they need to interact with different types of people who may be engaging in a variety of recreational activities (i.e., hiking, camping, extreme sports, etc.) over a potentially large area [11].

Research aimed at studying the individual and group characteristics of COs influencing their enforcement of environmental protection laws is limited. Most have focused on examining officers' intervention styles and discretion [12,19], as well as stress, motivation, and job satisfaction [11,14,20–22]. Forsyth [19] establishes two types of COs in terms of their intervention styles: (1) bookers, who strictly apply the law, and (2) peacemakers, whose styles are more oriented towards solving problems and preventing crime. Factors that condition their behavior may include the type of crime, its severity and previous interactions with the offender, as well as the offender's behavior, age, social class, recidivism, honesty, intent and justifications [12,19,23].

Studies on COs' occupational stress identify as relevant factors the perception of having to take on an increasing number of duties associated with traditional law enforcement [18] and the requirement to work long hours, which limits personal time with family [20], as well as the lack of communication and/or agreement with public authorities and institutions [21]. Specifically, many COs think that judges and prosecutors ignore environmental crimes because they are more concerned with crimes involving human victims, and therefore they only impose small fines or just dismiss these cases when they eventually come to court [24]. Dangers associated with COs' work include coping with people engaged in illegal activities who may be mentally unstable, under the influence of alcohol or drugs and/or armed [20]. Quantitative approaches have shown that officers' stress are associated with gender, education, marital status, longer tenures in the field, and higher frequency of performing traditional policing duties [14,22]. Interestingly, in the USA, when a state changes their previous title to that of conservation "police" officers, more in accordance with their organizational identity, they have greater organizational legitimacy from the public, law enforcement agencies and state legislatures [25]. However, they rarely perform traditional policing duties [14,26], and their academy training is still different from that of the general police [27].

Regarding satisfaction at work, Eliason [20] states that, in general, COs are happy with their job performance, and attribute their satisfaction to the following elements: independence, autonomy, job diversity, meeting people and enjoyment of the outdoors. In a further study, Eliason [11] claimed that the desire and enjoyment of working outdoors and protecting natural resources are the reasons most often given by these professionals when asked why they decided to become COs. In the study by Belhekar et al. [28] in Indian tiger reserves, supervisor feedback, task identity, skill variety and organizational commitment were the factors that affected COs' psychological well-being and work satisfaction.

1.2. The Present Study

The research described above focuses on COs' perceptions of their activities, difficulties, intervention styles, discretion, occupational stress and satisfaction at work. However, COs' perceptions of their work conditions have not been assessed in relation to their intervention behavior. To fill this gap, this study analyzes this relationship in two research steps. First, a descriptive analysis of conservation officers' perception of their working conditions is carried out with officers working for public authorities responsible for enforcing environmental laws in the study setting. To compare this perception with that of COs from other territories, several variables relevant to the field of job performance and satisfaction [29,30], as well as to environmental crime perception [6,31], were assessed. These variables were: training, material and human resources, descriptive social norms on intervention, intervention behavior, tasks usually carried out at work, nature of difficulties usually found at work, reasons for not intervening in certain cases, self-efficacy, job satisfaction, collective efficacy and intervention goals.

Second, a model of COs' intervention behavior was hypothesized and tested, using as a starting point Bandura's [32] model of self-efficacy, which has been successfully applied several times in the prediction of pro-environmental behavior (e.g., [29,33,34]). According to Bandura's [32] model, the variables included are, in addition to officers' intervention behavior, self-efficacy, satisfaction, goals, descriptive social norms and collective efficacy. Self-efficacy and motivation generally predict, directly or indirectly, pro-environmental behavior, including compliance with environmental protection laws [35]. Specifically, individuals with a greater environmental awareness are more satisfied with their behavior, feel more motivated, and set more ambitious goals [36]. Therefore, it seems reasonable to expect that self-efficacy, satisfaction and goals are related to the intervention behavior of professionals in charge of implementing environmental laws. Likewise, as these professionals are part of organizations with competence in environmental issues, perception of collective efficacy is anticipated to influence their behavior, given the impact of this variable on the performance of individuals who belong to a work group [37,38].

Descriptive social norms are expected to have a direct effect on intervention behavior, as they do on pro-environmental behavior [39,40]. For example, Lima and Branco [41] found that recycling behavior is influenced by what we see other people do, specifically in situations where the correct behavior is not clear. Vinnell et al. [42], in turn, show that descriptive social norms affect not only the support for existing laws on natural disasters, but also the willingness to adopt further preventive measures on a societal level. Descriptive social norms also play an important role in compliance with environmental laws in territories with high levels of environmental protection [5,6].

Based on the evidence presented above, the hypothesized model shown in the results section has been tested with a sample of professionals from four public authorities which are responsible for enforcing environmental laws in the study setting. This model anticipated the direct influence of self-efficacy, goals, satisfaction and descriptive social norms on behavior. In addition, it is expected that collective efficacy will directly influence self-efficacy, self-efficacy will directly influence goals and satisfaction, and satisfaction will directly influence goals.

2. Materials and Methods

2.1. Study Setting

This study took place in Tenerife, the largest and the most populated island of the Canary Islands and of Macaronesia. It has a surface area of 2034.38 km² and 973,622 habitants [43]. Tenerife is the second-largest of the Spanish islands in terms of surface area (Mallorca is larger), but the first in population. It is situated between parallels 28° and 29° N and meridians 16° and 17° W, at approximately, 1300 km from the European coast and 300 km from the African coast, as shown in Figure 1.

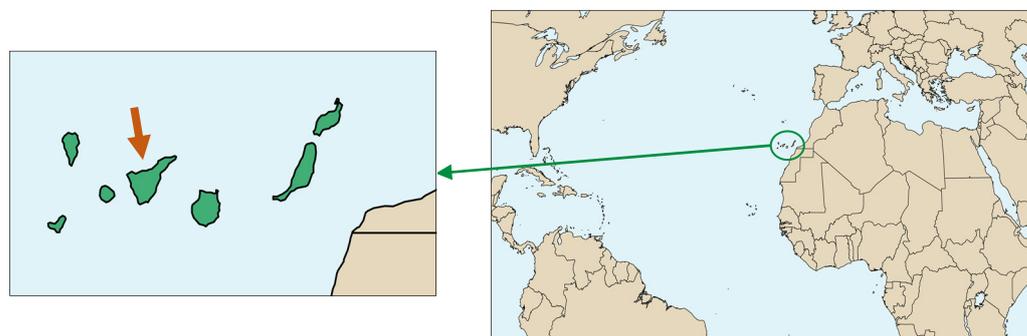


Figure 1. Location of Canary Islands and Tenerife in relation to Europe, Africa and America (created by the authors with mapchart.net (accessed on 13 November 2022)).

Tenerife is a highly environmentally protected island, as 48.6% of its territory is under the regulation of environmental laws. The protected areas comprise 43 sites of natural interest, with a high number of endemic species of flora and fauna. As shown in Figure 2, these sites include one national park and several natural monuments, protected landscapes, natural parks, countryside parks, special nature reserves, integral nature reserves and sites of special scientific interest (see also <https://www.tenerife.es/portalcabtfe/en/themes/medio-ambiente-de-tenerife> (accessed on 1 July 2023) for more detailed information).

The Canary Islands is one of the 19 autonomous regions of Spain, resembling in many aspects the legal and enforcement federated model of many other western countries, in which environmental law involves administrative, civil and criminal regulations, enforced at the federal, state and local levels. Behaviors regulated by these laws refer not only to protected flora and fauna, but also to illegal construction, inadequate disposal and/or management of both waste and hazardous materials, illegal use of natural resources, non-authorized activities and illegal modification of environmentally protected spaces, among other behaviors. Environmental laws and public authorities responsible for enforcing these laws in the island are therefore distributed across state,

regional, island, and municipal jurisdictions. (For more information on environmental laws and on environment law enforcement agencies in Spain and in the Canary Islands, see <https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/legislacion/> and http://www.gobiernodecanarias.org/hacienda/dgplani/fondos_europeos/normas_de_aplicacion/medio_ambiente/ (accessed on 1 July 2023)).

The COs that enforce environmental laws in Tenerife are members of the Environmental Protection Service of the Civil Guard (state authority) and the Urban and Natural Environment Protection Agency of the Canary Island Government (regional authority), as well as of the Environmental Area of the Tenerife Island Council (island authority) and the Ecological Police of the cities of La Laguna and of Santa Cruz de Tenerife (municipal authorities). Although each unit has its own jurisdiction, sometimes they may act in the same place and in relation to the same type of behavior, depending on the nature (state, region, island, or municipality) of the environmental law being broken and to ‘the degree to which [the specific behavior] seriously harms the balance of the natural systems’ (Art. 325, Spanish Criminal Code).

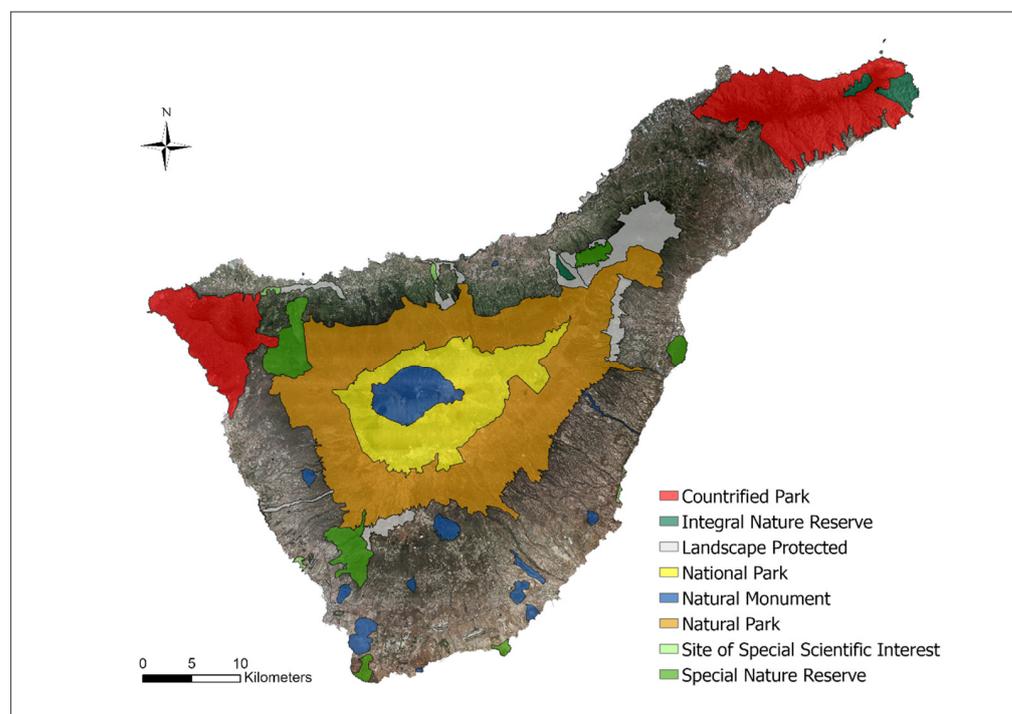


Figure 2. Network of natural protected spaces of Tenerife (Map generated by Cabildo de Tenerife (25 November 2020). Data sources: OrtoExpress (año 2019); GRAFCAN, <http://www.grafcan.es> cid (accessed on 20 November 2020): image001.jpg@01D6B376.6EEBD370; Red de Espacios Naturales Protegidos de Canarias; Consejería de Transición Ecológica, Lucha contra el Cambio Climático y Planificación Territorial, del Gobierno de Canarias, <https://opendata.sitcan.es/dataset/espacios-naturales-protegidos-de-canarias> (accessed on 20 November 2020). License CC-BY 4.0.).

Therefore, COs carry out their everyday work in the study setting under four jurisdictions but share the same territory of high environmental protection. It is not a large territory, and the distance between protected areas and cities allows COs to go home after finishing their workday. They have to enforce environmental laws according to their respective jurisdictions, referring those cases that fall outside it to other authorities. When non-environmental laws are broken, their duty is just to report the case to the police. Only state officers (Environmental Protection Service of the Civil Guard) carry weapons, because they are members of the army and have had military training before choosing the environmental protection unit. But even these officers have to delegate to other units of the Civil Guard when dealing with non-environmental criminal cases.

2.2. Participants

The sample consisted of 128 conservation officers, 81.3% of which were men, from the public authorities responsible for enforcing environmental laws in the study's setting. Their ages ranged from 26 to 63 years, with an average of 42.6 years (SD = 7.25). A total of 56.7% had completed university studies, 35.9% had secondary education degrees or vocational training, and the rest had completed their primary education. They were working for island authorities in 62.5% of the cases, municipal authorities in 15.6%, regional authorities in 12.5% and state authorities in 9.4%. Likewise, 80.5% of those surveyed were public officials, 13.3% were permanent employees, and only 6.3% had temporary positions. A total of 62.4% were field agents, and 37.5% were technicians and office staff. Moreover, 62.5% worked in both urban and rural areas, 32% only in rural areas and 5.5% only in urban areas.

2.3. Instruments

A questionnaire was developed to measure the variables under study using three types of questions (available from the corresponding author upon request). First, participants were asked directly about their age, and to indicate their gender, educational level, job position, type of employment contract, area of action (rural, urban, both) and organization.

Second, to measure training, material and human resources, descriptive social norms and intervention behavior, they answered according to an 11-point Likert type scale ranging from 0 ("Nothing") to 10 ("Totally") as to the following items: "Indicate to what extent the training you have received is sufficient to adequately perform your job"; "Indicate to what extent you have the material and human resources to adequately carry out your work"; "In your opinion, of how many environmental transgressions that occur in your area, is a file opened or is the person responsible asked to open one?"; and "In how many of the suspected environmental transgressions do you act in any way?".

The questionnaire also contained several scaled questions that participants answered using an 11-point Likert type scale, again ranging from 0 ("Nothing") to 10 ("Totally"). The items that composed these scales were either analyzed individually or averaged into a single score. Internal consistence calculated with Cronbach's alpha is provided below for cases in which items were averaged. The scaled questions were:

- Tasks Usually Carried Out at Work (To what extent does your job consist of...?), composed of eight items which were analyzed independently: "To patrol/surveillance in situ to prevent violations of environmental laws"; "To warn citizens when they transgress an environmental law"; "To advise/educate citizens on environmental matters"; "To report formally to the agency where you work when you become aware of a possible infraction"; "To request that an investigation be initiated or that a sanctioning file be opened when you become aware of a possible infraction"; "To open sanctioning files"; "To process sanctioning file"; and "To ensure that sanctions imposed by the competent authority are enforced".
- Nature of the Difficulties Usually Found at Work (To what extent do you think that the main difficulties you encounter in performing your job are...?), composed of four items; each was a different type of difficulty, taken from Du Rées [31] and analyzed independently: "Legal difficulties (e.g., to understand environmental laws or to know whether a specific incident is illegal behavior)"; "Technical difficulties (e.g., to determine the damage that has been caused to a species, to determine if a building is larger than what is allowed for a farm tool room)"; "Organizational difficulties (e.g., to have enough resources or staff)"; and "Competency difficulties (e.g., to know which unit/service/organism has to act in a specific case)".
- Reasons for Not Intervening in Certain Cases Scale (To what extent do you think that the reason why environmental violations remain unreported is that...?), composed of six items from Du Rées [31] which were then analyzed independently: "They are unimportant incidents that do little harm and do not affect anyone"; "Even if they are illegal they are not wrong"; "These are transgressions that are very difficult to prove"; "They were done unintentionally, by accident or by ignorance"; "Even if they

- are reported, they will remain unpunished”; and “It is better to educate transgressors than to report them”.
- Self-Efficacy Scale, composed of 3 items from Taberero and Hernandez [29]: “You feel able to perform your job adequately”; “You feel able to decide if a specific event constitutes a violation of environmental laws”; and “You feel able to advise/report on environmental protection matters”. The internal consistency of this scale was 0.78.
 - Satisfaction Scale, composed of two items that were averaged: “You feel satisfied with the work that you do”; and “You think that you would feel satisfied performing this same work in the future”.
 - Collective efficacy Scale, composed of 14 items, based on Riggs and Knight [44] and Taberero et al. [30] (See Appendix A). These items were averaged after checking that the internal consistency, Cronbach’s α , was 0.90.
 - Goals Scale, composed of two items which were averaged: “Regarding the tasks you perform in your daily work for the protection of the environment, we would like you to tell us the degree to which you would like to try to do better” and “Realistically, in how many environmental transgressions occurring in your area could you try to act in some way?”. In these cases, the scale of response ranged from 0 (“None”) to 10 (“All”).

2.4. Procedure

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Universidad de la Laguna (CEIBA2022-3224, 30 January 2023). First, permission to carry out the investigation was requested from the competent public authorities responsible for enforcing environmental laws in the study’s setting. Then, the project was presented to the heads of the units to which participants belonged, prior to agreeing with them on the procedure and schedule for data collection. Participants answered the questionnaire at their usual place of work, individually in most cases, in sessions lasting approximately 30 min. During these sessions, participants were informed of the objectives of the study and the importance of their collaboration. Anonymity of the responses and confidentiality of the information provided were guaranteed, and the participants were assured that the study was being conducted by the university, and not by the authority they worked for. Finally, participants were asked to sign an informed-consent form before filling out the questionnaire.

2.5. Data Analysis

Data analysis was carried out using IBM SPSS Statistics software, version 22, and EQS Multivariate Software, version 6.1, in two steps. First, the internal consistencies of the different scales were calculated using Cronbach alpha, before taking the average of the items. Then, descriptive analysis for all variables (mean, standard deviation, and response range) was carried out. Correlations between variables included in the model were also performed.

Second, the proposed model, shown below in Section 3.3., was tested through a structural equation analysis. Goodness-of-fit was considered to measure the association between the model and the data used to prove it, using statistical and practical indicators [45]. The statistical indicators included χ^2 , which assesses the difference between the proposed and the saturated model. If the theoretical and saturated models are not different, χ^2 will have a low, non-significant value ($p > 0.05$). However, since a large sample size usually results in a significant value of this indicator, practical indices are preferred over statistical ones. Practical indicators come from χ^2 but control for the effect of the sample size on the significance level when the two models are compared. The practical indices utilized were the Bentler–Bonnet normed fit index (BBNFI), the comparative fit index (CFI), and the Bentler–Bonnet non-normed fit index (BBNNFI). They should have values higher than 0.90 [46]. The root mean squared error (RMSEA) index, which requires a value below 0.08, was also calculated [47].

3. Results

The results from the data analyses are described in three sections. First, descriptive analyses of COs' tasks, resources, training, difficulties, and reasons for not reporting transgressions are presented. Second, descriptive analyses of the variables to be included in the hypothesized model are provided. These variables are intervention behavior, descriptive social norms, goals, satisfaction, self-efficacy and collective efficacy. Third, the results of the structural equation analysis are shown, as well as the determinations of the indices of the model's goodness of fit to the data.

3.1. Descriptive Analyses of COs' Working Conditions: Tasks, Resources, Training, Difficulties and Reasons for Not Reporting Transgressions

3.1.1. COs' Tasks

As displayed in Figure 3, the tasks COs performed most frequently were reporting, advising/educating, patrolling/surveillance, asking somebody else to open a file, and to make warnings. The least-frequent tasks were opening a file, processing an already-opened file and enforcing sanctions.

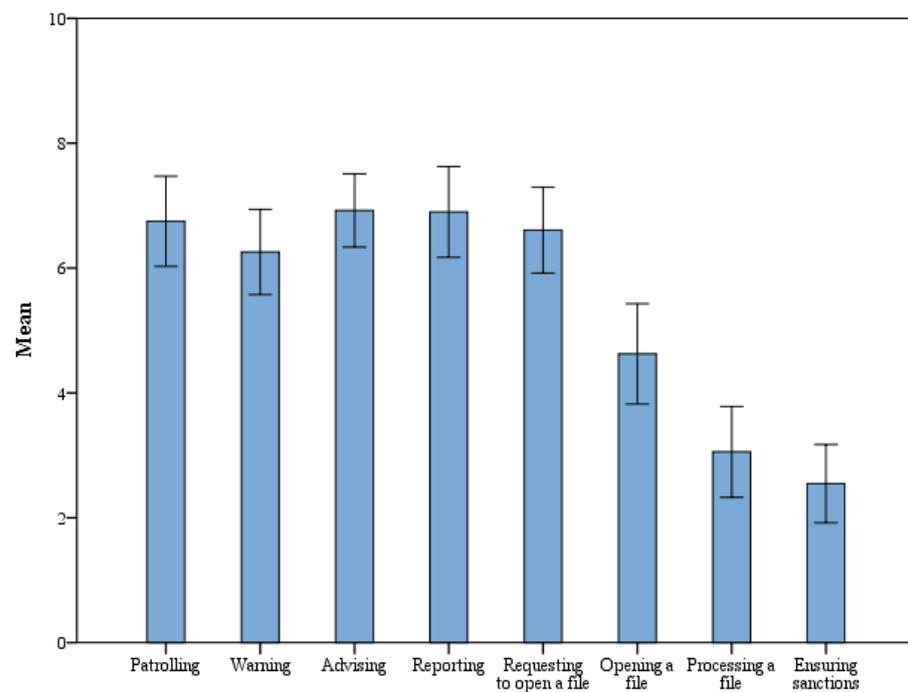


Figure 3. Frequency of tasks carried out by participants in their daily work.

3.1.2. COs' Resources, Training and Difficulties

Participants' perceptions of resource availability were in the mid-point of the scale ($M = 5.92$, $SD = 2.15$), whereas perceptions regarding previous training were a little higher ($M = 6.80$, $SD = 2.05$). With regard to participants' difficulties in carrying out their jobs, organizational difficulties were the most important, although it seems that, in general terms, officers did not find so many difficulties, as shown in Figure 4.

The "other" difficulties added by 29% of participants ($n = 37$) are displayed in Table 1. It is worth noting that the list includes difficulties of political interests and unfinished sanctioning processes.

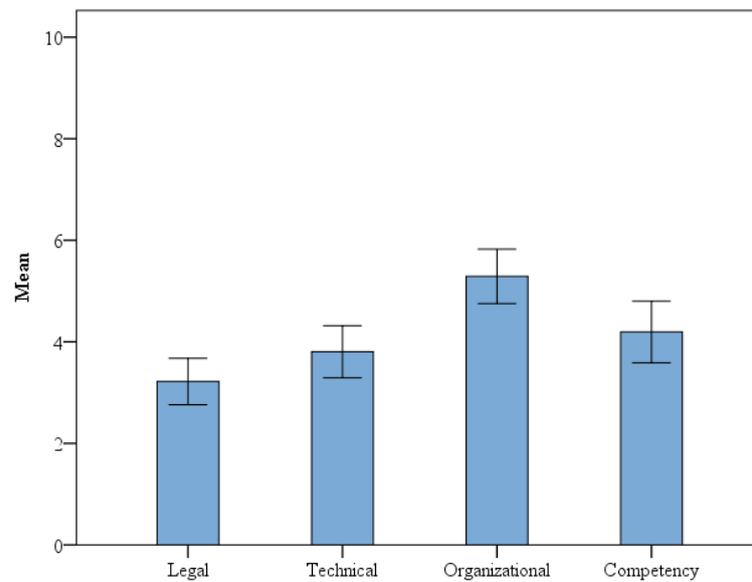


Figure 4. Difficulties found by participants in carrying out their daily work.

Table 1. Frequency of the “other” difficulties found by participants in carrying out their daily work.

“Other” Difficulties in Carrying Out Their Daily Work	<i>n</i>
Political interests	11
Unfinished sanctioning processes	8
Lack of resources	7
Lack of collaboration with the state agency	3
Lack of support of their own organization	3
Hierarchy/organization of the unit	3
Frequent and socially acceptable behavior	1
Lack of identification of the role of the forestry officer	1
Total	37

3.1.3. COs’ Reasons for Not Reporting (Some) Environmental Transgressions

The reasons officers gave for not reporting some environmental transgressions are displayed in Figure 5.

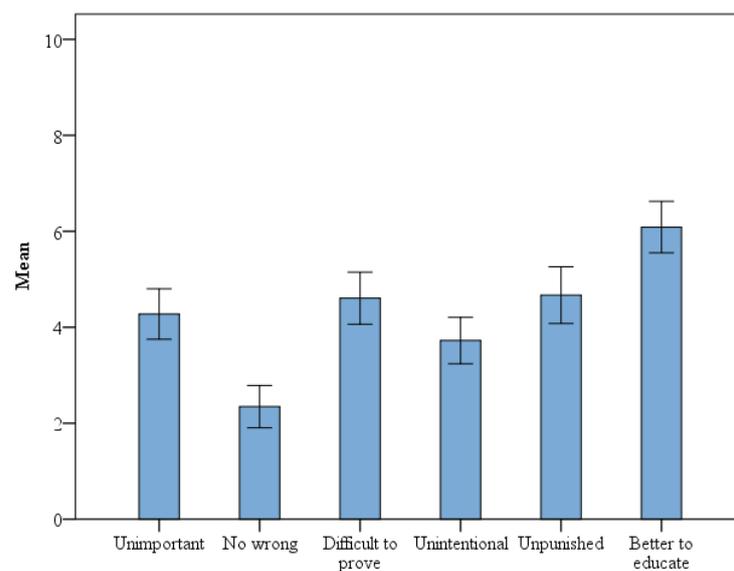


Figure 5. Reasons given by participants for not reporting environmental transgressions.

The most frequent reasons were: “It is better to educate the transgressor than to report them”; “Even if they are reported, they will remain unpunished”; “These are very difficult transgressions to prove”; and “They are unimportant incidents that do little harm and do not affect anyone”. When asked, 26.5% of participants (n = 34) suggested other reasons, which are displayed in Table 2.

Table 2. Frequency of the “other” reasons given by participants for not opening a file.

“Other” Reasons to Not Open a File	n
Lack of political interest	8
Unfinished sanctioning processes	7
Lack of resources	7
Lack of motivation	2
Lack of collaboration with the state agency	4
It is better to pay a fine than to report illegal behavior	3
Lack of institutional information accessible to the public	1
Lack of time for carrying out the sanctioning process	1
Friendly relationship with the accused	1
Total	34

3.2. Descriptive Analyses of the Variables to Be Included in the Structural Model: Intervention Behavior, Descriptive Social Norms, Goals, Satisfaction, Self-Efficacy and Collective Efficacy

Means, standard deviations, ranges of responses and correlations between Intervention Behavior, Descriptive Social Norms, Goals, Satisfaction, Self-Efficacy and Collective Efficacy are shown in Table 3. The internal consistency is displayed only for the Collective Efficacy and Self-Efficacy scales, as the rest of measures involved fewer than three items. All means are above 7, in a scale of 11 points, except for Descriptive Social Norms, which is 6.5. The highest correlation is between Intervention Behavior and Goals, and the lowest between Descriptive Social Norms and Self-Efficacy.

Table 3. Mean, standard deviation, response range and correlation between variables (* $p < 0.05$; ** $p < 0.01$).

Variables	α	Mean (SD)	Min Max	1	2	3	4	5
1. Collective Efficacy	0.90	7.5 (1.5)	2.8–9.9					
2. Self-Efficacy	0.78	8.6 (1.2)	3.7–10	0.26 **				
3. Satisfaction	-	7.8 (2.1)	0–10	0.32 **	0.16			
4. Goals	-	7.9 (1.9)	0–10	0.16	0.33 **	0.24 **		
5. Descriptive Social Norms	-	6.5 (2.4)	0–10	0.24 **	0.10	0.14	0.18 *	
6. Intervention Behavior	-	7.4 (2.8)	0–10	0.23 **	0.35 **	0.32 **	0.61 **	0.38 **

3.3. Structural Model: The Relationship of Descriptive Social Norms, Goals, Satisfaction, Self-Efficacy and Collective Efficacy with Intervention Behavior

The model shown in Figure 6 was tested with structural equation analysis, using EQS Multivariate Software, version 6.1. The variables included in the analysis were Intervention Behavior, Descriptive Social Norms, Goals, Satisfaction, Self-Efficacy and Collective Efficacy.

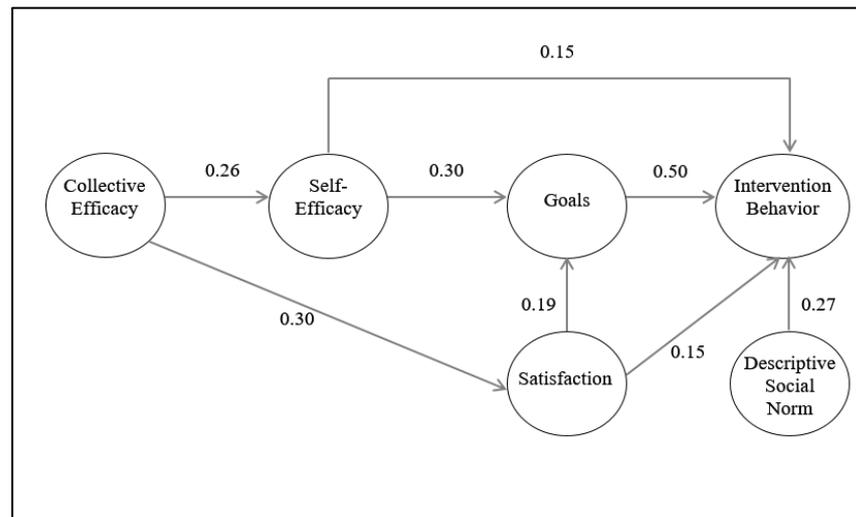


Figure 6. Results of the structural equation analysis. Note—Goodness of fit indices of the model: $\chi^2(6) = 10.50$, $p > 0.05$; RMSEA = 0.07; CFI = 0.96; BBNFI = 0.92; BBNNFI = 0.91; $R^2 = 0.455$.

The model explains 45.5% of the variance in the Intervention Behavior. For goodness of fit, although χ^2 was significant ($\chi^2(6) = 10.50$, $p > 0.05$), probably because of the large number of participants included in the analysis, the remaining indices demonstrated the adequacy to the data of the model tested (BBNFI = 0.92, BBNNFI = 0.91, CFI = 0.96, RMSEA = 0.07) [46].

The path standardized coefficients of the structural model show that Collective Efficacy has a positive and statistically significant influence on Self-Efficacy and Satisfaction. Self-Efficacy positively and significantly influences Goals and Intervention Behavior, but not Satisfaction. Satisfaction influences Goals and Intervention Behavior. Finally, the Descriptive Social Norm influences Intervention Behavior. In summary, officers' intervention behavior is explained by their goals, followed by their descriptive social norms and their self-efficacy and satisfaction, the last two having a similar weight.

4. Discussion

In discussing the findings, we will focus first on COs' perceptions of their working conditions, comparing them with those of COs from other territories. Next, the results of the structural model of the COs' intervention behavior are discussed, before discussion of the implications of the results for policy, practice and/or programs and the limitations of the study.

4.1. Conservation Officers' Perceptions of Their Working Conditions in the Study's Setting

COs working in the study's setting share with COs from other territories tasks such as patrolling and reporting environmental transgressions. But they also include advising/educating as one of their most frequent activities [15]. They did not complain about their previous training or about the resources available to carry out their everyday job, though they were not completely happy with them. Accordingly, they agreed that the main difficulties that they found were organizational, such as not having enough resources or personnel available in certain situations in which they were needed. Likewise, it is worth noting that some participants, answering an open question of the questionnaire, spontaneously pointed to political interests and unfinished sanctioning processes when asked about other difficulties, in line with findings of Du Reed [31], Martín et al. [48], Hester et al. [21] and Eliason [24].

COs estimated that they acted in around 74% (7.4 over 10) of the suspected environmental transgressions that occurred in their areas. The reasons they gave for not doing so in the rest of the cases were that they believed that, in those specific situations, it was

better to educate than to report people and, again, that transgressions would remain unpunished. It is interesting to see how these difficulties and reasons for not intervening are similar to those given by COs in Sweden [31], and relate to those of the general public, also obtained in this study's setting [48]. In Martín et al.'s study [48], for example, among the justifications for environmental transgressions with more weight were "Those who enforce the law are the first to break it", and "Authorities place too many obstacles that leave no other choice". Likewise, COs' claims about the lack of institutional support are consistent with one of the sources of stress reported previously for park rangers and game wardens in US: the perceived lack of communication and/or agreement with authorities and institutions, especially prosecutors and judges [21,24]. It seems that this perception of the lack of legitimacy of the environmental laws and of the authorities who enforce them is a problem affecting COs that crosses borders and continents and one that deserves to be specifically investigated.

Other sources of stress at work pointed out by the research are not relevant for the COs in this territory, or probably for those from other territories outside of the US: performing duties associated with traditional law enforcement that include carrying guns, and limited time with family because of distances and/or long working days. Future research on COs focused specifically on environmental law enforcement in territories from Europe, Africa, Asia and/or Australia (e.g., [28]) would allow transcultural comparisons that would be useful in clarifying how to improve COs' performance and satisfaction at work.

The results of this study also show that COs consider that their performance is a little higher than the norm, which is coherent with the self-enhancement bias [49] and does not require any additional comments. The same psychological process may be involved in the higher self-efficacy ratings, although related to collective efficacy. Satisfaction is at a high level, as are the goals, although the relationship of the latter with intervention behavior is stronger than with the former. To further investigate these relationships, structural equation analysis was carried out as the second research step of this study.

4.2. *The Structural Model of the COs' Intervention Behavior*

The result of the structural equation analysis of the hypothesized model (see Figure 6) confirmed the anticipated relations between variables. As expected from previous studies on pro-environmental behavior [29,33], self-efficacy and satisfaction influenced COs' intervention behavior both directly and through goals. The findings of the present study, however, go one step further than did the previous evidence by confirming the direct impact of descriptive social norms on behavior, in line with studies by Hernández et al. [5] and Martín et al. [6] on illegal anti-ecological behavior, as well as those on the relation of collective efficacy with self-efficacy and satisfaction [50,51].

Research on the impact of goals on behavior suggests that information selection and processing, as well as behavior, are determined by the relevance of a person's own general goal framework [52]. In the field of environmental psychology, hedonic, normative, or "gain" goals may facilitate the realization of pro-environmental behaviors through different mechanisms [53]. In this study, it is primarily gain goals, those aimed to guard and improve one's resources, which are explicitly analyzed. However, it could be assumed that descriptive social norms, which also directly influence behavior, may be related to normative goals, those associated with acting appropriately [52]. It would be interesting for future research to delve further into this relationship, as well as the existence of hedonic goals, those oriented towards feeling better right now, which would also contribute to promoting COs' actions in response to environmental transgressions. What is evident is that the goals set by the COs, whether individually or collectively, influence their levels of intervention.

Previous studies have also shown the role of self-efficacy in influencing the degree to which a person is able to participate in, and perform, pro-environmental behaviors, as it involves a person's perception of his or her own ability to successfully carry out a particular endeavor [54,55]. Therefore, the results of this study are coherent with this

previous evidence, as the COs' perceptions of their ability to successfully carry out their environmental protection duties has a direct influence on their behavior, and an indirect influence through goals. The more self-efficacious COs perceive themselves to be, the more ambitious their goals will be, and thus their levels of intervention will increase.

The second variable that directly influences behavior, as well as indirectly through goals, is job satisfaction. These results are in line with previous work on the influence that satisfaction with pro-environmental behavior has on such behavior [36]. They are also consistent with those results obtained in studies in workplace environments, where satisfaction describes a person's enjoyment of their work, and how this affects their physical and mental health during the performance of their job [56]. A high level of job satisfaction resulting from education in pro-environmental attitudes also helps workers to improve their competencies in environmental issues [57]. Finally, these results are consistent with the model proposed by Tabernero and Hernández [29,33] on the influence of self-efficacy on pro-environmental behavior. In short, the more satisfied COs feel in their work, the more ambitious their objectives will be and the higher their level of intervention will be.

The third variable in the hypothesized model that directly influenced COs' intervention behavior, one with greater weight than satisfaction and self-efficacy, is the descriptive social norm. The focus theory of normative conduct by Cialdini et al. [58] establishes that descriptive social norms, as referring to the perception of what most people do, are the most effective and adaptive type of norms [59]. This perception motivates people to use others' behavior as a reference when making decisions about their own behavior. Along these lines, our results show that COs' perceptions of how their colleagues act is one of the most significant factors determining whether they intervene in response to environmental transgressions. These results also replicate those obtained by Collado et al. [39] and Vesely and Klöckner [40] on pro-environmental behavior, and by Hernández et al. [5] and Martín et al. [6] on the impact of descriptive social norms on illegal anti-environmental behavior. In a few words, these findings suggest that rather than intervening individually with COs to improve their enforcement of environmental law, it is better to handle it as a group, since the level of intervention of each one will reinforce the others.

Finally, our results indicate that collective efficacy also influences behavior indirectly, through self-efficacy and satisfaction, along the lines of previous investigations on this construct [50,51]. According to these authors, collective efficacy develops from shared experiences and the exchange of views among the different members of an organization [51]. Research on COs has previously assumed that they mostly work alone [11,18], but in our case, even though COs may act on their own on occasions, they do so as part of an organization within which they interact in different ways and at different levels with other workers. Thus, the organizational dimension must be taken into account when COs' intervention behavior is analyzed, as collective efficacy is a higher-level construct that goes beyond the mere aggregate of beliefs these professionals might hold individually regarding their effectiveness in performing their daily work [50,51]. Therefore, given the link between collective efficacy and self-efficacy, as is the case in other workplace environments [60], future research should take this variable into account when intervening to improve the effective implementation of environmental laws. To this end, the Collective Efficacy Scale, provided in Appendix A, may be a useful tool.

4.3. Implications for Policy, Practice and/or Programs

The findings discussed so far have several implications for conservation authorities in relation to policies involving both their officers and the general public. First, communication should be improved between COs and the authorities in charge of sanctioning environmental breaches and crimes, especially, but not only, prosecutors and judges. COs' perception of the lack of agreement with these authorities on the seriousness and the need to punish environmental offenses is one of the reasons they give for not intervening. This perception is shared by park rangers and game wardens in US [21,24], by COs in Swe-

den [31], and by the general public in this study's setting [48], suggesting a need to consider it in interventions across borders and continents.

Second, COs' selection and training should take into account that their job demands may be different depending on the territory in which they work [14]. For example, in this study, COs perceive that they have the need to educate the general public on how to avoid damaging the environment and to collaborate in its protection, while in some countries they have to perform duties more associated with traditional policing, which involves carrying guns [18]. Moreover, the COs who participated in this study could go home every day after work, whereas in other territories they have limited time with their families due to distances and/or long working days [20]. Thus, in those territories in which COs need to educate people to comply with environmental laws and collaborate with its enforcement, as in the study setting, it would be helpful to provide them with strategies, skills and tools of environmental education. In other territories, as in the US, training should include the use of guns, and, in COs' selection, determining the applicant's ability to be away from loved ones for a period of time.

Lastly, intervention programs aimed at improving COs' effectiveness at work should enhance their perception of collective efficacy, as it makes them feel more empowered and satisfied at work. Such feelings are important, since they lead COs to set more ambitious individual goals which, in turn, increase the frequency of their interventions aimed at protecting the environment. Programs for COs should be group-based rather than individualized, because, even though they may work alone on occasions, they do so as part of an organization where they interact, in different ways and at different levels, with other workers. Members of a work team can influence the others' perceptions of collective effectiveness and the level of group intervention, more than might a professional from outside the group. Thus, policies that make good practices and make the productivity of the group more visible should be encouraged.

4.4. Limitations of the Study

This study has some limitations that should be considered when generalizing the results obtained. First, the number of participants is small. Nevertheless, the total population of COs from public authorities involved in environmental matters in the territory where the study was carried out was accessed and almost all were willing to participate. Second, the participants carry out their work in a territory characterized by its high degree of legal environmental protection. Despite this, their daily tasks are similar to those described by Moreto and Matusiak [15], and they face similar difficulties to those pointed out by Patten and Caudill [17] and Shelley and Crow [18]. Furthermore, the high level of environmental protection of the territory may be seen as a virtue rather than a problem, as it makes environmental laws (formal injunctive social norms) salient and in line with the focus theory of normative conduct of Cialdini et al. [58]. If, in such circumstances, descriptive social norms have an impact on behavior, it is to be expected that these types of norms would have an even greater impact in territories with less legal environmental protection.

5. Conclusions and Suggestions for Future Research

Despite the above limitations, this work can contribute to the understanding of the role played by psychosocial processes in the implementation of environmental laws in natural contexts, as proposed by authors such as Forsyth and Forsyth [13] and Eliason [11,12]. The results support a model consistent with the previous research from other areas, and which shows the impact of norms, goals, self-efficacy and collective efficacy on the behavior of professionals in charge of enforcing environmental laws. In addition, this model establishes the relationship between these variables, laying the foundation for intervention programs aimed at improving the performance of these professionals, while integrating individual, group and organizational dimensions. However, although the goodness-of-fit indices for the structural equation analysis are good in statistical terms, any conclusions and generalizations should be drawn with caution until the results are replicated with larger

samples and in other territories. Also, it is possible that other variables not included in this model may be of interest in predicting COs' intervention behavior, and therefore should be assessed by future research.

It is evident that the demands that COs receive from authorities are linked to the territory under protection, to the law in force and to the culture in which they carry on their work. In some territories, the priority may be protecting wild fauna from poachers, whereas in others it may be avoiding the destruction of endemic flora, preventing forest fires, or even stopping illegal construction in areas under protection. But in all cases, they are asked to enforce environmental law, a fragmented and difficult-to-coordinate area of legislation, which involves administrative, civil and criminal regulations applied at the federal, state and local levels [61]. These laws regulate behaviors whose "wrongness" is not always obvious and that do not always have public support [48].

Environmental protection laws can be useful tools in promoting sustainability, as they are aimed at eradicating transgressions against the environment while encouraging the acquisition of alternate sustainable behaviors. However, the mere enactment of laws does not automatically generate behavioral change, especially when the change requires effort. Laws can contribute to changing people's attitudes and values, but in order to do so, those responsible for enforcing them must first internalize them, experimenting with this change and promoting it themselves. To achieve this end, it is important that future research delves into the psychosocial processes that influence people to accept and internalize these laws, both in complying with them and in enforcing them effectively. The research should also address how to enhance the roles of law enforcers, not so much to chase environmental offenders, but to educate people on the necessity and legitimacy of these laws. This work aims to contribute to this objective by promoting interest in the research domain in the psychological processes underlying the enforcement of environmental laws and the impact of this on sustainability.

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Appendix A. Escala de Eficacia Colectiva [Collective Efficacy Scale]

Señale en qué medida cree que el servicio/unidad del que usted forma parte...
[Indicate the extent to which you believe the service/unit of which you are a part. . .]:

	0 = En absoluto[Not at all] 10 = Totalmente[Totally]										
(1) ...es eficaz [... is effective.]	0	1	2	3	4	5	6	7	8	9	10
(2) ...podría funcionar mejor de lo que lo hace actualmente [...could work better than it currently does].(Reverse ítem)	0	1	2	3	4	5	6	7	8	9	10
(3) ...funciona mejor que otros servicios que hacen un trabajo parecido [...works better than other services that do a similar job].	0	1	2	3	4	5	6	7	8	9	10
(4) ...tiene un personal con una capacidad por encima de la media [has a staff with above-average capacity].	0	1	2	3	4	5	6	7	8	9	10
(5) ...es capaz de cumplir las tareas que tiene asignadas [... is able to fulfill the tasks assigned to it].	0	1	2	3	4	5	6	7	8	9	10
(6) ...es capaz de cumplir con los plazos establecidos [... is able to meet established deadlines].	0	1	2	3	4	5	6	7	8	9	10
(7) ... es capaz de tomar decisiones importantes [...is able to make important decisions].	0	1	2	3	4	5	6	7	8	9	10
(8) ...tiene un personal que se pasa la información sin ningún problema [... has a staff that passes on the information without any problema].	0	1	2	3	4	5	6	7	8	9	10
(9) ...es capaz de trabajar conjuntamente para resolver un problema [... is able to work together to solve a problema].	0	1	2	3	4	5	6	7	8	9	10
(10) ...es capaz de llegar a un acuerdo sobre qué es lo más importante [... is able to agree on what is most important].	0	1	2	3	4	5	6	7	8	9	10
(11) ...es capaz de trabajar conjuntamente sin preocuparse por quién se lleva más méritos (o la culpa si las cosas salen mal) [... is able to work together without worrying about who gets more credit (or blame if things go wrong)].	0	1	2	3	4	5	6	7	8	9	10
(12) ...es capaz de hacer frente a una situación de emergencia medioambiental [... is able to cope with an environmental emergency situation].	0	1	2	3	4	5	6	7	8	9	10
(13) ...es capaz de encontrar una alternativa aceptable cuando no puede resolver del todo un problema [... is able to find an acceptable alternative when a problem cannot be completely solved].	0	1	2	3	4	5	6	7	8	9	10
(14) ...es capaz de encontrar los recursos necesarios para resolver un imprevisto [... is able to find the necessary resources to solve an unforeseen event].	0	1	2	3	4	5	6	7	8	9	10

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