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Influence of Emotions on the Acceptance of an Oil Drilling Project

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Abstract

In 2014, the Canary Islands were exposed to a decision-making process for an oil drilling project 80 kilometers offshore. Whereas the national government was in favor of oil drilling, the local government was against it because of the environmental impact, and the effect on tourism and the coastal ecosystem. In this study, we analyze the reactions of the local community to this project by connecting beliefs, perceived benefits, perceived risk, procedural justice, negative emotions, and acceptance through a tested structural equation model. The results showed that acceptance was essentially explained by perceived benefits and negative emotions, whereas perceived benefits and procedural justice predicted negative emotions. Several differences between males and females were found. These results are discussed in relation to the importance of understanding the effects and emotional reactions of this type of project on the population before the final decision making.

Keywords

oil drilling, emotions, environmental beliefs, procedural justice, acceptance

Generally, technological interventions in the environment confront local communities, promoters, and authorities who have supported the intervention

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(Firestone & Kempton, 2007). However, rarely is public administration divided between supporters and critics. In this study, we analyze the reactions of the local population to oil drilling off the Canary Islands in late 2014. The viability of this energy project was analyzed by national and local governments. Local residents detected the discrepancy between the Spanish national government and the Canary Islands government through the media. The national government was in favor of oil drilling as a source of economic development through employment and energy at a lower cost, whereas the local government was against it because of the environmental impact, the effect on tourism, and damage to the coastal ecosystem. The local press reported the results of a local government survey for the community, which revealed that the majority of interviewees (75.4%) agreed that oil drilling could be harmful to the environment because of coastal pollution and incompatibility with an environmentally friendly tourism model (EFE, 2014). This situation led to a confrontation regarding the legitimacy of the legal process used by the national government and the belief that the opinion of the population had not been taken into account. In this context, we considered a study whose main objective was to analyze the role of certain psychosocial processes that prior research had shown to influence the acceptance of similar energy projects.

Community acceptance is a key factor in the successful implementation of energy projects by governments (Upham, Oltra, & Boso, 2015). Acceptance has been defined as a positive attitude toward a specific fact that is manifested in the form of opinion or support behavior, consent or authorization (endorsement, approval, and approbation; Kraeusel & Möst, 2012). Acceptance would therefore be the attitude to the object, that is, the extent to which one agrees with what will be carried out. Support, however, would be visible behavior, that is, the active response to the situation (Batel, Devine-Wright, & Tangeland, 2013). In general, ratings of acceptance are higher than those of support because support requires a behavioral component (Dreyer, Teisl, & McCoy, 2015). People do not always show their rejection of energy projects through obvious behavior, but this does not indicate acceptance (Rau, Schweizer-Ries, & Hildebrandt, 2012), hence the importance of measuring the degree of acceptance among the population. Such acceptance depends on personal, sociopsychological, and contextual factors (Devine-Wright, 2011), involving numerous variables revealed by prior research. These are (a) the characteristics of the project and the context in which it is developed; (b) people's beliefs about their relationship with the environment; (c) the assessment of costs and benefits on an environmental, and economic and social level; (d) the information to which people have had access; (e) the perceptions of procedural justice in terms of satisfaction with the procedure

and the result; and (f) the emotions aroused by the possible changes brought about by an energy project. All these variables that, in isolation, have been shown to affect the acceptance of the energy project were connected, according to the research results outlined below. These serve as a basis for the model proposed at the end of the introduction.

Energy has important implications as an essential resource for the economic development of nations and of improved standards of living; however, it has also been a barrier to environmental maintenance and conservation (Dincer, 1999; Omer, 2008). Previous studies have identified broad public attitudinal trends about energy and the environment (DeCicco, Yan, Keusch, Muñoz, & Neidert, 2015; Leiserowitz, Kates, & Parris, 2006). Citizens' attitudes can differ depending on the kind of energy. Several studies have found that most local communities have clearly negative attitudes toward oil drilling, believing it to be harmful to the environment and to health (Cacciatore, Binder, Scheufele, & Shaw, 2012; Edino, Nsofor, & Bombom, 2010). Public opinion has generally shown greater support and a positive or neutral attitude toward renewable energies than offshore oil (Eurobarometer, 2005; Lilley & Firestone, 2013). In general, changes in the natural environment can cause different affective and personal reactions that influence the acceptance of a new energy infrastructure, although sociodemographic and contextual characteristics, such as proximity to the area where the intervention will take place (not in my back yard [NIMBY] effect), have also been found to influence the acceptance of technological projects (Devine-Wright, 2007; Mukherjee & Rahman, 2016; Portney, 1991). In recent years, however, the NIMBY effect has been questioned because it is understood to overvalue the general factors of risk perception, ignoring the nature of each environmental intervention, and therefore, the specific nature of each risk, as well as the emotional and motivational components, and individuals' bonds with their surroundings (Devine-Wright, 2011). Given that the objective of this study is precisely to assess the weight that the perception of risks and benefits, and emotions, may have on the acceptance of a specific oil drilling project, we have chosen not to include proximity as an explanatory factor.

However, natural resources are valued differently depending on the system of values and beliefs of a cultural group (Sjöberg, 2003). In certain cultures and contexts, economic development from energy resources does not counteract the effect on the environment (Necefer, Wong-Parodi, Jaramillo, & Small, 2015). For example, energy interventions on the environment in lands whose principal economic activity is based on natural resources (climate, beach, beautiful surroundings) would increase the likelihood of rejection of energy resources in the local population (Imran, Alam, & Beaumont, 2014). This is the case of the Canary Islands where this research was being

undertaken, where tourism is the main economic resource and any impact on the natural environment can have significant repercussions.

Beliefs are a potential factor influencing the acceptance of energy projects. Indeed, beliefs are an important component of several theories predicting behavioral intention and behavior itself. According to Fishbein and Ajzen's (1975) reasoned action theory and Ajzen's (2001) planned action theory, beliefs about an attitude object and particular behavior influence attitudes, which then influence behavioral intention. The Value-Belief-Norm (VBN) theory also attributes an important role to beliefs in pro-environmental behavior prediction (Steg, Dreijerink, & Abrahamse, 2005; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). According to these theories, beliefs act as a filter when a novel phenomenon is presented.

Traditionally, two systems of environmental beliefs have been identified: ecocentric, which considers the individual as a part of nature and integrated in an ecosystem, and anthropocentric, which focuses on the individual's dominance over nature and other species (Dunlap, Van Liere, Mertig, & Jones, 2000). However, a new paradigm of interdependence has emerged proposing an integration of both approaches based on the interaction existing between behavior and environment (Corral-Verdugo, Carrus, Bonnes, Moser, & Sinha, 2008). Some studies have found that human interdependence beliefs are associated with pro-environmental behaviors (Hernández, Suárez, Corral-Verdugo, & Hess, 2012), revealing greater explanatory power than the bipolar models (Corral-Verdugo et al., 2008). It is therefore to be expected that beliefs in environmental interdependence influence the behaviors of acceptance or rejection of environmental projects.

Moreover, risk perception is an essential process for the acceptance or rejection of a specific technological project (Binder, Scheufele, Brossard, & Gunther, 2011; Siegrist, Gutscher, & Earle, 2005). The benefits and risks perceived have a powerful effect on acceptance (Bearth & Siegrist, 2016). At the same time, beliefs have been shown to be associated with the perception of ecological risk (Slimak & Dietz, 2006) and benefits (O'Connor, Bord, & Fisher, 1999). Prior beliefs are then expected to be associated with the perception of risks and benefits, and subsequently, the acceptance or rejection of an environmental project. The degree of perceived risk has often been measured using a direct procedure, which involves participants indicating on a numerical scale the extent to which the source of risk may damage or interfere with several areas of their lives. Specifically, participants are asked how much risk a particular stimulus poses to the self, personal health, the family, other groups, as well as to society, the environment, and the economy (Leiserowitz, 2006; Peters, Burraston, & Mertz, 2004; Stein, Buzcu-Guven, Dueñas-Osorio, Subramanian, & Kahle, 2013).

Similarly, information is needed to assess risks and benefits, and project acceptance. The perception of individuals as to whether they have appropriate information about the associated economic costs and environmental damage could be decisive for the acceptance of an energy project (Siegrist, Cvetkovich, & Roth, 2000). The credibility and legitimacy of information sources are also important factors in adapting to and accepting environmental changes (Frank, Eakin, & López-Carr, 2011). In this respect, the trust that the community places in its political leaders to transmit truthful information about the project will exert an influence on a positive or negative attitude and on the acceptance of the project.

The availability of credible information contributes to perceived procedural justice. Theories about procedural justice maintain that the acceptance of the decision making is influenced by how fairly the process has been treated (Napier & Tyler, 2008). It has been shown that people feel more satisfied with institutions and legal procedures when their opinions are respected, they can participate in the decision-making process, and self-determined behavior is supported (Corral-Verdugo et al., 2014; Lavergne, Sharp, Pelletier, & Holtby, 2010). Previous research has demonstrated that to sustain resources in the future and further the well-being of individuals, it is useful to promote and enhance environmental justice through interdependency between individuals and the ecosystem, including an egalitarian distribution of resources and power, environmental protection, and care for the planet today (Dominelli, 2013). In this regard, local community participation and engagement in the decision-making process in environmental regulation and policy take on an important role in the social acceptance of specific projects (Pero & Smith, 2008; Walker, Wiersma, & Bailey, 2014). Police encouragement of citizen participation is an important factor for promoting citizen satisfaction, confidence and cooperation with the police, and enhancing perceptions of procedural justice (Mazerolle, Bennett, Davis, Sargeant, & Manning, 2013). However, technical information for new environmental projects is not always provided for the community, and this shortcoming may have a negative effect on the acceptance of the project. Even if the project is beneficial to the community, it could be rejected on the basis that members of the local community were not included in the decision-making process. It is suggested that information could have a direct effect on perceived procedural justice, which will then have a direct effect on project acceptance.

However, psychosocial models have often failed to account for the attitude and social acceptance of environmental projects attributing human decision making mainly to rational processes, while the role of emotions has been largely ignored (Durán, Alzate, López, & Sabucedo, 2007; Kals, Schumacher, & Montada, 1999). People feel ownership of the spaces they occupy and

observe how these changes can produce different emotions, such as feelings of loss, grief, anxiety, alienation, and longing (Fried, 2000; Milligan, 2003; Ruiz & Hernández, 2014). These emotional reactions also appear when changes are related to the implementation of projects designed by organizations, companies, or governments. Anticipating negative consequences can cause dread, fear, or anxiety (Sjöberg, 2003). The initial emotional evaluation that takes place before a project is launched may affect the acceptance of that project (Beaudry & Pinsonneault, 2005).

Some research has shown that negative anticipated emotions and past experience predict behavioral intentions (Carrus, Passafaro, & Bonnes, 2008) and that emotions drive pro-environmental actions through general motivational processes (Vining & Ebreo, 2002). Human decision making has been shown to be linked to both rational and emotional processes (Damasio, 1998). Therefore, a combination of cognitive (information/belief) and affective (emotions) processes may influence the acceptance or rejection of environmental actions. The perception and interpretation of what is occurring in a situation can influence the emotions experienced in a process of attitude change. Emotion is a type of knowledge based on the holistic integration of sensory, cognitive, and metacognitive data from assessing the environment (Briñol, Gandarillas, Horcajo, & Becerra, 2010; Chaudhuri, 2002). As put forward in Ellis' (1973) cognitive theory of emotion and supported in subsequent studies on the processing of emotions (Mestre & Guil, 2012; Seligman, Reivich, Jaycox, & Gillham, 1995), emotions provide a filter between thoughts and behaviors. The perception and evaluation of the stimulus are processes that precede the emotional experience (Palmero, 2001). Neuroimaging studies (Dubois & Adolphs, 2015) support the appraisal theories approach, which maintains that the emotions that people experience are determined by a complex set of evaluations and coping mechanisms (Moors, Ellsworth, Scherer, & Frijda, 2013).

Hence, beliefs and perceptions may foreseeably influence emotions, which in turn may affect decisions about an environmental project. Prior studies have found that emotions are generated depending on individuals' perception of the features of new technologies and their appraisal of the extent to which these technologies may suppose a threat or an opportunity for their daily lives (Venkatesh, 2000). It is true that automatic emotional responses of fear or anxiety may be triggered in the face of situations of alert, resulting in a higher perception of risk, or that people who are emotionally negative in their daily lives may consider these situations as high risk. However, in this study, we analyze the emotions experienced by people when they assess and think about an oil drilling project.

We merged a model connecting the main variables described and used structural equation modeling (SEM) to assess the role of interdependence beliefs, perception of risks and benefits, procedural justice, perceived information, and emotions in explaining acceptance of oil drilling. Based on previously presented research on beliefs, we hypothesized that interdependence beliefs will show a direct relationship on the perception of risks and benefits, procedural justice, and acceptance of oil drilling. Likewise, the information available on the project will have an effect over the perception of risks, benefits, and justice, in terms of the process followed, as well as over acceptance of the project itself. Moreover, there is sufficient evidence of how the perception of risks and benefits, and procedural justice affect the acceptance of technological projects (Napier & Tyler, 2008; Siegrist et al., 2000). We therefore hypothesize that there will be a direct relation between these different perceptive processes and project acceptance.

In addition, based on Ellis' (1973) cognitive theory of emotion, which places beliefs and perceptions at the heart of emotional experience, we hypothesized not only that there will be a direct relationship of beliefs on emotions, but also that emotions will be predicted by the perception of risks and benefits, perceived procedural justice during the process, and the amount of information about action. Finally, emotions will directly affect the level of acceptance of oil drilling. Given that prior studies have found that higher levels of negative emotions are associated with being female, young, and reporting financial hardship (Mackinnon et al., 1999) and that sex, age, and income may be related to the acceptance of environmental projects (Devine-Wright, 2007), these variables have been included in the model or controlled by groups contrast analysis. Figure 1 shows the model of relations between the variables outlined above.

Method

Participants

A nonrandomized sample of 635 residents (54% females) from the seven Canary Islands participated in the study. We endeavored to find a proportionate number of participants from each island, according to the number of inhabitants, but not a representative sample of the population. The final sample reflected 0.03% of the total population of all seven Canary Islands. Age ranged from 19 to 90 years ($M = 41.82$; $SD = 16.72$). The employment status of participants was as follows: 50% were employed, 23% were students, 11% were unemployed, 11% were retired, and the remaining 5% were otherwise occupied.

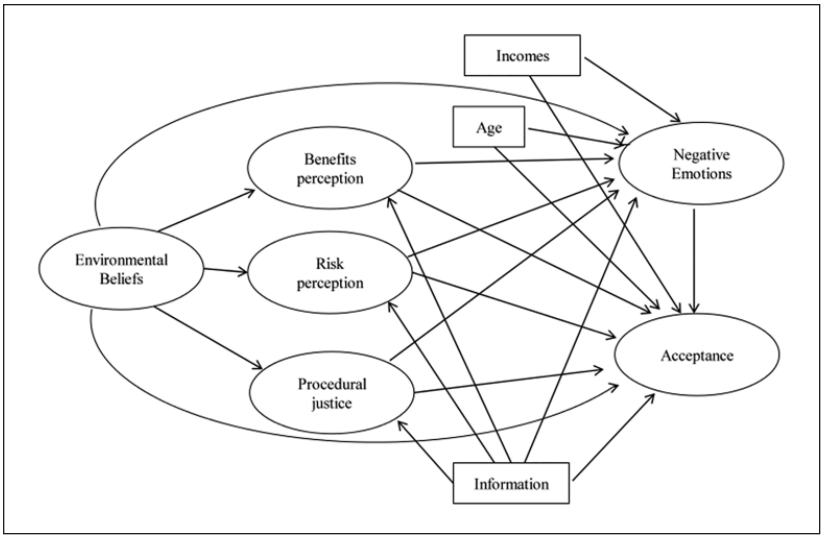

Figure 1. Theoretical model of the relation between the study variables.

Instruments

We designed an assessment protocol that was used by interviewers to carry out the structured interviews (see Online Appendix A). We included questions and scales about the following variables: sociodemographic information about gender, age, and employment status; environmental beliefs; procedural justice; benefits and risk perception; emotions; information and acceptance.

1. *Environmental beliefs* were assessed according to the New Human Interdependence Paradigm (NHIP) Scale (Corral-Verdugo et al., 2008). This scale included five items of environmental beliefs relating to a holistic worldview, combining the beliefs of the human need for nature and for nature to be cared by humans. Items included both functional interdependence of human progress and nature conservation (e.g., "Human beings can progress only by conserving nature's resources") and temporal interdependence of the current requirement to satisfy human needs and the use of natural resources for future generations (e.g., "We must reduce our consumption levels to ensure well-being of the present and future generations"). The original scale is rated on a 5-point Likert-type scale, with a Cronbach's alpha of .78.

In the current study, scale was answered on a 10-point Likert-type scale, ranging from *strongly disagree* to *strongly agree*. The scale also showed an appropriate alpha of .70 in the Canary Islands population (Hernández, Suárez, Hess, & Corral, 2010). In this study, Cronbach's alpha was .84.

2. *Negative emotions* were assessed through five negative adjectives from Watson, Clark, and Tellegen's (1988) Positive and Negative Affect Schedule (PANAS). Participants were asked to rate the emotions that they experienced when they assess and think about an oil drilling project offshore of the Canary Islands coasts (e.g., "nervous," "distressed," or "afraid"). In this study, responses were measured with a 10-point Likert-type scale (1 = *strongly disagree*, 10 = *strongly agree*). The short form of the PANAS has shown to be psychometrically acceptable: .78 for positive emotions and .87 for negative emotions (Thompson, 2007). In this study, Cronbach's alpha for the negative emotions scale was .88.
3. *Benefits perception*. Participants were given a list of eight items that assess benefits perception, such as economic development, reduced unemployment, or improvements in the standard of living of the local community resulting from oil drilling (e.g., "Oil drilling in the islands will bring economic benefits to the Canary Islands," "Oil drilling will bring investment to the islands," "Oil drilling will help overcome the economic crisis in the Canary Islands," "Drilling for oil will create new jobs in the Canary Islands," "Drilling for oil will contribute to the social progress of the Canary Islands"). Participants rated their level of agreement using a 10-point Likert-type scale, from *strongly disagree* to *strongly agree*. These five items were kept in the measurement model, with a Cronbach's alpha of .94.
4. *Risk perception* was assessed through three items about the risk to the environment, the risk to health, and the risk to the economy resulting from oil drilling (e.g., "Oil drilling involves a risk to the environment"), following the same procedure as in previous research into risk perception, which directly asks about the impact on certain aspects of life or the environment (Leiserowitz, 2006; Peters et al., 2004; Stein et al., 2013). Responses were measured with a 10-point Likert-type scale (1 = *strongly disagree*, 10 = *strongly agree*). Cronbach's alpha for this scale was .92.
5. *Procedural justice* referred to how participants perceived the manner in which the Spanish national government organized the operation of oil drilling in the Canary Islands. Participants were asked about the degree of participation in decision making, using five items on a

10-point Likert-type scale, from *strongly disagree* to *strongly agree* (e.g., "The Spanish authorities are treating island residents with dignity and respect," "The Spanish authorities are treating island residents fairly," "The Spanish authorities are taking time to listen to island residents," "The Spanish authorities are explaining their decisions to island residents," or "The Spanish authorities are taking decisions based on facts and the law, and not on their views and interests"). In this study, Cronbach's alpha for this scale was .90.

6. *Information* assessed whether individuals perceived that they were sufficiently informed by using a single question: To what extent do you consider yourself informed about oil drilling off the Canary Islands? Responses were also measured with a 10-point Likert-type scale (1 = *strongly disagree*, 10 = *strongly agree*).
7. *Acceptance* assessed the extent to which the individual agrees with the oil drilling, along the same lines as the work by Batel et al. (2013). Specifically, participants were asked the following two questions within a section that makes express reference to Acceptance (see Online Appendix A): "To what extent do you agree to oil drilling off the Canary Islands?" and "To what extent would you agree with future oil drilling near the island where you live?" Responses were measured with a 10-point Likert-type scale (1 = *strongly disagree*, 10 = *strongly agree*). Cronbach's alpha for these two items was .97.

Procedure

A nonrandomized study was conducted. Participants were contacted through psychology students who voluntarily administered the assessment protocol, by using it as a guide to carry out a semistructured face-to-face interview with participants. The questionnaires took about 20 min to complete.

The researchers asked students to locate people of different ages, sex, and professions who would be willing to participate in the study to increase sample variability. We selected the number of students required to obtain a number of participants per island based on the population. In this way, 1,000 questionnaires were distributed to 75 students throughout the islands and 667 of them were collected. Finally, after removing 32 incorrectly completed questionnaires, we obtained the sample of 635 participants outlined above. At the end of the questionnaire, a contact telephone number was requested for data-checking purposes. The interviewers explained that the research team needed to confirm participation in the research. A data check was carried out on 10% of participants randomly distributed among the interviewers. No

incongruences were identified, and data collection was considered valid; no participant was removed through this procedure.

Statistical Analyses

SEM with latent variables was performed (Bollen, 1989) to test the proposed model in Figure 1, using R library lavaan (R Core Team, 2016; Rosseel, 2012) with ULLRToolbox by Hernández and Betancort (2016). We chose SEM because diverse relationships between different variables can be checked at the same time, unlike classic regression, which would involve estimating "artificially" independent multiple regression models. Latent variables were constructed through the inclusion of the individual measures listed in the previous section. Nonsignificant pathways between variables ($p > .05$) were then removed to achieve a parsimonious model. Analyses of covariance structure were performed in two stages: in the first, the model for the entire sample (Baseline Model) was adjusted; in the second, we checked that the model was the same for males and females (Configural Model). This multigroup estimation revealed the invariance of the structural model between the contrasted groups through the inclusion of constraints in the model estimation, which forced loadings (Measured Model), regression (Structural Model) parameter values, and means of latent variables (moment analysis) to be the same for the two groups. The significance of some of these constraints by Lagrange Multiplier Test enabled us to assess which parameter or parameters vary for each group (Bentler, 1989).

Results

Descriptive statistics among the variables included are displayed in Table 1. The results indicated that most participants held interdependence beliefs and clearly rejected oil exploration. Also, participants disagreed with the legal procedure carried out, considering that they had received limited information about the project. Moreover, they perceived more risks than benefits and had a tendency to experience negative emotions to oil drilling (Table 1).

The proposed model in Figure 1 was checked by SEM. In the first step, results indicate a satisfactory fit of the model for the entire sample (Baseline Model). Although a significant $\chi^2(334, N = 559) = 833.94$, $p < .001$, was obtained, the other fit indexes led to acceptance of the model: root mean square error of approximation (RMSEA) = .052, 90% confidence interval (CI) = [.047, .056]; normed fit index (NFI) = .93; non-normed fit index (NNFI) = .95; comparative fit index (CFI) = .95. The covariance of errors of benefits perception and procedural justice had to be released (permit values not equal to 0) to achieve the model fit,

Table 1. Descriptive Statistics for Included Variables.

	M	*SD*	Range
Environmental beliefs	8.74	1.58	0-10
Risk perception	5.62	3.61	0-10
Benefits perception	3.53	2.39	0-10
Procedural justice	2.15	2.26	0-10
Information	3.77	2.69	0-9
Negative emotions	5.94	2.95	0-10
Acceptance	2.62	2.53	0-10

indicating a joint error variance not explained by our model. The covariance of the measurement errors of Items 1 and 2 of procedural justice (Items 1 and 2 in the procedural justice scale) were also released. In structural equations models, the exogenous latent variables can covariate freely (phi parameters) but the endogenous latent variables cannot covariate at all (by model). Nevertheless, these endogenous latent variables have not explained variance (error variance or diagonal psi parameters) than can covariate (psi parameters out of the diagonal), probably because they have a common source of not explained variance. The effect of incomes over acceptance, age over negative emotions, information over negative emotions and over risk perception, risk perception over acceptance, and environmental beliefs over acceptance, predicted in Figure 1, were nonsignificant and were eliminated in the final model.

This model was used in the second step with multigroup estimation to check whether the proposed model was the same for males and females. First, a Configural Model (two groups without any constraints) was estimated. Although the fit indexes were now smaller, they were still adequate: $\chi^2(668, N = 554) = 1{,}257.6$, $p < .001$, RMSEA = .056, 90% CI = [.052, .061]; NFI = .89; NNFI = .94; CFI = .95. Subsequently, a model with constrained factor loadings (Measured Model) for both groups was estimated, showing no decrease in fit. The difference in the chi-square in the two multiple-groups models was not significant ($\chi^2 = 25.308$, $df = 19$, $p > .05$). After measurement model invariance was established, structural differences were examined (Structural Model). The previous model was compared with a new one with loading and regression parameters constraints. The differences between this Structural Model and the Configural Model was nonsignificant after five structural parameters were released ($\chi^2 = 8.4781$, $df = 9$, $p > .05$). The five structural parameters with significant difference between males and females were as follows: environmental beliefs over risk perception and age over acceptance were nonsignificant for males; environmental beliefs over

benefits perception, incomes over negative emotions, and information over acceptance were nonsignificant for females. The final Structural Model and these differences are shown in Figure 2, a slash (/) between values indicating when there are differences between males and females.

The model accounted for adequate proportions of variance in both endogenous final factors, for both males/females: negative emotions (53/50%) and acceptance (65/71%). Environmental beliefs were a significant predictor of benefits perception for males but not for females, while environmental beliefs were a significant predictor of risk perception for females but not for males. However, environmental beliefs were a significant predictor of procedural justice, for both males and females. For both groups, the β value for environmental beliefs over negative emotions, though significant, was very low (.07), and there was no direct effect of environmental beliefs over acceptance. Benefits perception, risk perception, and procedural justice were significant predictors of negative emotions, although Benefits perception explained the highest percentage of variance of negative emotions with a β value of −.57. The contribution of risk perception to the variance of negative emotions was significant, but so low (.10) that it might be attributed to a power excess due to large sample size rather than to a real influence (spurious effect). Incomes were a significant predictor of negative emotions only for males. Information showed a significant relation with benefits perception, procedural justice, and acceptance, but in the latter, only for males. Acceptance was largely explained by negative emotions with a β value of −.29, and benefits perception with a β value of .48. The contribution of procedural justice to the variance of acceptance was no longer significant when the two groups (males and females) were included. Finally, the contributions of Information to the variance of acceptance was significant only for males, and age only for females, although in both cases, they were so low that, once again, we considered the need for future studies to ascertain whether they might be attributed to an excess of power because of large sample size and hence an unavoidable spurious effect.

Finally, a multigroup SEM moment analysis (means comparison between groups) allowed us to compare group means differences in every latent variable. None of six latent variable means differences were significant between males and females ($p > .05$). Figure 2 shows all the β values and the direction of relations between the factors (see Online Appendix B for correlations, means, and standard deviations of observable variables for males and females).

Discussion

In the current study, we tested a theoretical model that explained the acceptance of oil drilling based on psychosocial factors. In general, the results

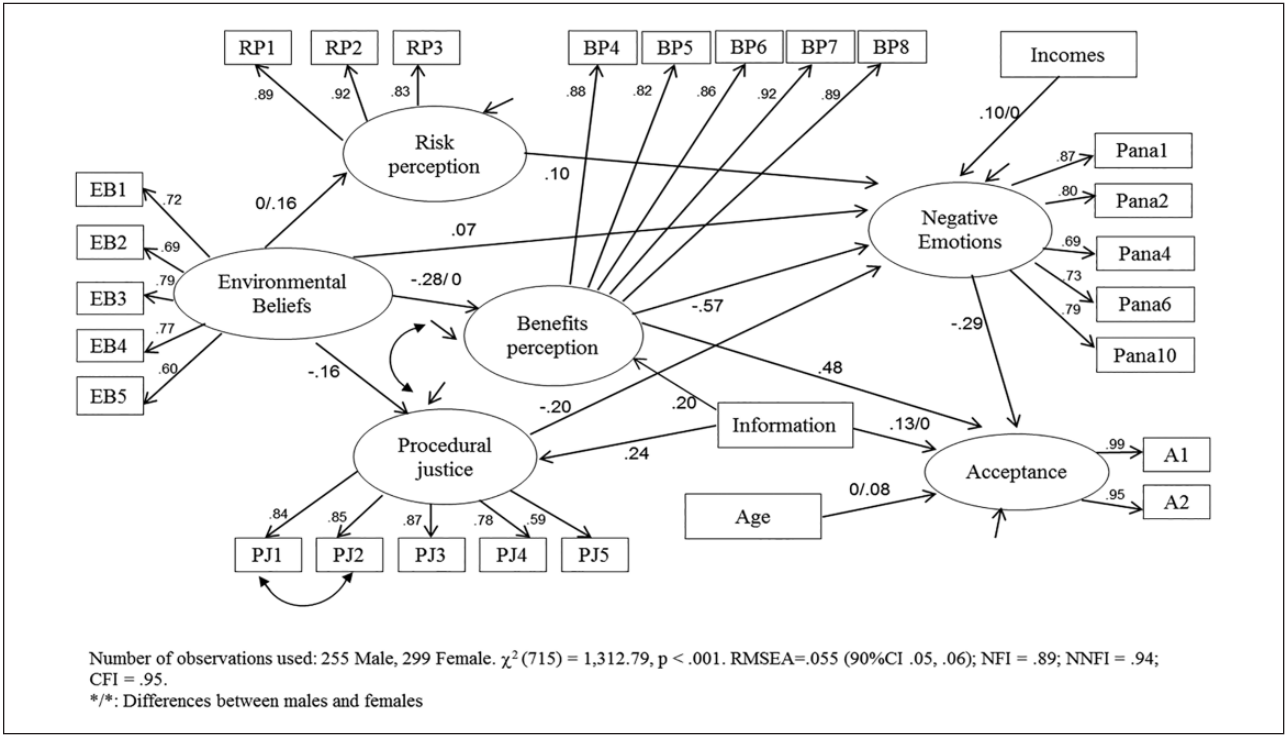

Figure 2. Structural Model obtained.
Note. RMSEA = root mean square error of approximation; NFI = normed fit index; NNFI = non-normed fit index; CFI = comparative fit index.

obtained indicate that the local community showed a low level of acceptance of this kind of energy project. This is consistent with the results obtained in the previous survey undertaken by the Canary Islands government also involving a population from different islands (EFE, 2014), thereby demonstrating the validity of the results.

The proposed model was adapted for the entire sample and separately for male and females, although there were small differences between each group. For females, beliefs about interdependence were associated to risk perception but not benefits perception; the opposite occurred for males. Similarly, income was associated to negative emotions for males but not for females. Age does not affect the final acceptance of the project for males, but carries a certain weight for females. Finally, the received information explained part of the variance of acceptance for men, but had no effect in the case of females.

Therefore, the final model is similar for males and females, in terms of the acceptance, or not, of oil drilling: benefits perception and negative emotions were what explain acceptance in both groups. Likewise, no differences were found in the means of any of the variables in the study. Therefore, it cannot be said that these results show females to have more negative emotions associated with the oil drilling project, as found in studies on everyday emotions (Mackinnon et al., 1999), nor that there are differences in the level of acceptance of the project for men, as may have been suggested in previous studies (Devine-Wright, 2007). Age and income were not shown to be important in the final variance of the acceptance of oil drilling. The weight of demographic variables in the acceptance of environmental projects continues to be contradictory, as already indicated by other studies (Carlisle, Feezell, Michaud, Smith, & Smith, 2010; Devine-Wright, 2007).

With this model, we want to highlight the importance of emotions for the acceptance of an energy project, as many studies on decision taking and pro-environmental behaviors have only included cognitive variables. Based on Ellis' (1973) model and appraisal theories of emotions (Moors et al., 2013), we have considered emotions to be the bridge between the beliefs and perceptions of individuals, and the decisions they make. Although cognitive variables can also exert a direct influence on the acceptance of a project, the emotions aroused by the interpretation of that proposal have been shown to be an important factor behind the acceptance/rejection of the oil drilling project. Indeed, in the final model, the load of risk perception, environmental beliefs, and procedural justice was only significant on negative emotions and not directly on acceptance.

These results concur with those of other research on the importance of emotions in environmentally relevant behavior (Carrus et al., 2008; Chaudhuri, 2002; Durán et al., 2007; Durán, Ferraces, Rodríguez, & Sabucedo, 2016).

Emotional bonds, such as place attachment, have also been related to acceptance of environmental intervention (Devine-Wright, 2009) or the human response to natural disasters (Ruiz & Hernández, 2014). For example, it has been shown that risk perception is not only based on physical elements that might be dangerous but also on other emotional, social, and cultural factors that may affect end perception and alter how people adapt to the demands of the situation (Gaillard, 2008; Tobin et al., 2011). The intensity of the emotional response has also been linked to the proximity of residence to the environment where the changes take place (Ruiz & Hernández, 2014) or to the magnitude of the changes that have or are expected to occur (Lai & Kreuter, 2012).

In our study, the other factor associated with acceptance and, at the same time with this negative emotional state, was benefits perception: The fewer the benefits perceived, the greater the negative emotional response and lower acceptance. Some authors have found that support for energy projects depends largely on the economic benefits that they bring to the community (Bidwell, 2013). In our study, the local population perceived few benefits, whether economic or otherwise, from oil drilling, hence the general rejection and nonacceptance of the project. Perceived benefits had greater impact on acceptance than perceived risks, which was consistent with previous studies (Visschers & Siegrist, 2014).

However, negative emotion was not explained only by the perception of benefits. Perceived procedural justice, the extent to which participants considered that legal and information procedures and collective participation had been adequately managed, contributed to a higher negative emotional response. Our results showed that the local population was not satisfied with the management of energy issues by the different levels of government (procedural justice). As we have said previously, much of the rejection was due to the modus operandi of the project developers rather than the project itself. The proportion of individuals who would support an energy project increases when the proposal comes from local government rather than private developers (Firestone & Kempton, 2007). The oil drilling project in the Canary Islands was proposed by private business and backed by the national government. However, local government had voiced its objection to the project and its support for renewable energies in the islands. The information transmitted by the media may have encouraged a negative opinion about benefits of the project and the procedure followed to introduce it. The need to release the covariance of errors of benefits perception and procedural justice to fit the model shows that these two variables may both be related to others not included in the model. Future studies could explore this further.

Moreover, in our study, the population did not perceive a high environmental risk associated with the oil drilling project. In fact, this factor explained a small part of the negative emotions, and the relationship with acceptance is not significant. Previous research has found that people evaluate risk through affective reactions or rational analysis (Chaudhuri, 2002; Tobin et al., 2011). When people have positive or favorable feelings toward a situation, they judge risks as low and benefits as high; an opposite pattern occurs when negative or unfavorable feelings appear (Finucane, Alhakami, Slovic, & Johnson, 2000). In our study, emotion and perceived benefits seems to have been the salient factors in the assessment of whether or not to accept the oil drilling project over and above the real or perceived risk.

The other variable that showed a direct effect on the acceptance of the oil drilling project was the assessment of the amount of information available to participants, but only for males. Our results confirm a positive—albeit minimal—relation between these variables. Our results therefore coincide with prior studies that have shown that the information provided has a direct relationship with support for technology (Cacciatore et al., 2012; Frank et al., 2011). What remains clear in our study is that information levels were positively linked to perceived benefits and procedural justice. Appropriate and reliable information may enhance acceptance of this type of intervention. It is important to bear in mind that participants mainly relied on information from the local media, which highlighted the fact that most island residents rejected this kind of activity. This information may have acted as a perceptual filter for the evaluation of the perception of benefits and attitudes toward technologies, as shown in other studies (Binder et al., 2011).

Contrary to what was expected, interdependence beliefs had little bearing on the model. No direct relation was found between beliefs and acceptance of the oil project, although a moderate connection between beliefs, risk and benefits perception, and procedural justice perception was observed, but with differences by sex. Beliefs of interdependence led to increased risk for women and a decrease in benefits for men. Previous studies pinpointed the influence of beliefs on behavioral intention and decision making (Arroyo-López, 2012; Durán et al., 2016; Steg et al., 2005; Stern et al., 1999). In our study, however, beliefs only exerted an indirect effect. People who mostly believed that there should be an interdependent relationship between humans and the environment were more sensitive to the possible risks or absence of benefits to the environment of an oil drilling project. Therefore, to a certain extent, environmental beliefs influence people's interpretation of the situation, their perception of the performance of the agents involved and the possible consequences, and how information about a new environmental project is organized (Sjöberg, 2000).

Furthermore, a minor direct relation between beliefs and emotions was found, but beliefs essentially were related to emotions through perceived benefits and risks, and procedural justice. The interpretation of the reality in which we are immersed affects the emotions we feel (Briñol et al., 2010). In this case, as we have already seen, beliefs in interdependence affect the perception of reality regarding risks, benefits, and procedural justice. The greater the risks, the fewer the benefits, and the less procedural justice perceived, the more intense will be the emotions aroused by oil drilling.

A possible limitation to be taken into account in the interpretation of the results is the low level of acceptance of oil drilling by most participants. These results are therefore related to a context of low acceptance of an energy project, and the weight of emotions that we found may not be replicated in a situation in which the population has no prior negative attitude. It is therefore necessary to verify the weight of emotions in contexts of positive assessment of the project. In our study, the emplacement of oil drilling in islands whose economy is based on tourism and where these installations would have a visual impact on the landscape could be a compelling reason for rejection of the project. This may limit extending the results to other contexts. Furthermore, despite our attempt to produce a sample of all the islands, with sufficient variability depending on sex, age, and socioeconomic level, the sample cannot be considered representative, thus restricting the generalizability of the results.

Another limitation to consider is the measurement used to evaluate information about oil drilling. We measured the extent to which participants perceived that they had been given sufficient information but not the objective amount of information that they might have had. In future research, this variable should be measured with more indicators. It would also be interesting to analyze whether participants are given information about community benefits in terms of creating jobs, income, and about specific risks, as well as the sources of such information, thereby improving measures of risk and benefits perception. However, we believe that this model has enabled us to establish that benefits exert greater effect on acceptance than risk perception and that emotions seem to play a central role in decision making in the face of environmental change.

Useful future research would involve further qualitative exploration of individuals' reasons for opposing such projects (whether they trust the veracity of the benefits and costs of the project, whether there is a clearly negative attitude to traditional energies in favor of renewable energies). This would improve the measurement of acceptance, which is rather limited in this study, which included only two questions. The inclusion of more specific measurements of behavioral support would also be advisable.

In our study, the perception of the unfair nature of the process had a moderate effect on rejection of the project, and when males and females are compared, this effect was not significant. Some studies have found that the outcomes fairness, perceived benefits, and general attitudes are more related to acceptance of an energy project when compared with procedural fairness (Visschers & Siegrist, 2012). Therefore, it is important that the project lead to a favorable outcome for the population, whose participation should be counted upon before it is launched. Future analysis could examine whether there was more acceptance from those who actually participated in decision making compared with those who had not. In this study, it was not possible to check whether participants had been called upon by the agents involved in developing the project to ensure they would have meaningful participation in the decision making.

In sum, this study has shown that several factors can influence public opinion about an oil drilling project. Negative emotions and low perceived benefits generated a rejection of this kind of project. In addition, perceived benefits and procedural justice and, to a lesser extent, perceived risk contributed to the negative emotions. Appropriate information would create a more favorable attitude to an oil drilling project. Environmental changes relating to energy management require a precise knowledge of the specific action, as well as a better understanding of the effects on the population. The engagement of the local community in environmental conservation and sustainable tourism may have been determining factors for the negative emotions aroused, and that led to the rejection of this type of drilling.

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