

# Mining managers' causal attributions of socio-environmental conflicts and intergroup perceptions

## Percepciones intergrupales y atribuciones causales de conflictos socioambientales por gerentes mineros

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### Abstract

The unprecedented mining boom of the 1990s in Latin America may or may have not contributed to socioeconomic development in the region, but it has certainly been accompanied by increased socio-environmental conflicts. Economists and sociologists have developed taxonomies for such conflicts and have attempted to explain them based on theories of resource mobilization, rational options, social cohesion, and identity construction applied to settings of generally extreme poverty. This study developed and tested psychological hypotheses based on personal values, attribution theory, reputational concern of the firm, intergroup threat theory, and UV radiation theory entailing mining managers' reactions to socio-environmental conflicts in Peru and effects of latitude and altitude. Forty-three Corporate Social Responsibility managers of the 49 mining corporations registered in the Society of Mining, Petroleum, and Energy of Peru filled-in a 20-minute question-

naire in the presence of one of the investigators at company offices (December 2017). 100 % of respondents were male, most of them middle-aged. A 3-factor structure of political, economic, and ecological concerns sustained the attributions of cause whereas mine's surrounding populations were perceived as moral, incompetent, and positive; in balance, these perceptions represent favorable conditions for conflict resolution. However, contrary to expectations, firm's experience of socio-environmental conflicts was not associated with these outcomes. Rather, geography emerged as a moderator of the relationship between the level of socio-environmental conflict experienced and managers' perceptions of the surrounding populations. These results suggest that mining managers more affected by socio-environmental conflict strengthened racial stereotypes in response to the external challenge.

*Keywords:* mining, socio-environmental conflict, managers, intergroup perceptions.

## Resumen

Los economistas discuten si la enorme expansión de la minería de los años 1990s en América Latina –generalmente a base de capital extranjero– ha contribuido o no al desarrollo socioeconómico de la región, pero en lo que ellos y otros científicos sociales están de acuerdo es en que tal expansión ha estado acompañada de crecientes conflictos socioambientales. Economistas, sociólogos, y antropólogos han desarrollado taxonomías de los conflictos y han intentado explicarlos usando teorías de movilización de recursos, opciones racionales, cohesión social, y construcción de identidad aplicadas a ambientes de extrema pobreza, como lo son generalmente los circundantes a las minas. Sin embargo, los estudios se han concentrado en los comportamientos de estas poblaciones. En este estudio la pregunta es cómo perciben los gerentes mineros peruanos el origen de los conflictos socioambientales. ¿Como causados por el deseo de las comunidades de preservar el ambiente, proteger sus fuentes de agua, mantener su estilo de vida, participar en los beneficios económicos de la mina, responder a una agenda política, corregir los errores ambientales verídicos o esperados de la mina? En segundo lugar, se desarrollan y se prueban hipótesis psicológicas sobre las reacciones de los gerentes ante conflictos socioambientales. Una hipótesis, basada en la teoría de la atribución y la de preocupación reputacional de la firma, fue que su percepción de los conflictos dependería de la medida en que sus minas experimentaron conflicto. Otra hipótesis, basada en la teoría de la amenaza intergrupala, fue que la percepción que tienen los gerentes de los atributos personales de las comunidades vecinas sería más negativa en función de la magnitud de los conflictos experimentados. Tercero, se predijo que las reacciones de los gerentes variarían en función de la latitud y altitud de las minas; la teoría de la radiación UV predice menor inteligencia de la población con la altura sobre el nivel del mar y con la

distancia a la línea ecuatorial. Cuarenta y tres gerentes de Responsabilidad Social Corporativa de las 49 corporaciones mineras registradas en la Sociedad de Minería, Petróleo, y Energía del Perú llenaron un cuestionario de 20 minutos de duración en presencia de uno de los investigadores en sus oficinas (Diciembre 2017). En su totalidad, eran hombres, la mayoría de mediana edad. Una estructura de factores políticos, económicos y ecológicos sostuvo las atribuciones de causa de los conflictos; en efecto, pese al pequeño número de casos, el análisis confirmatorio de factores identificó consistentemente un factor político (políticos y organizaciones no-gubernamentales movilizan reclamos por daños supuestos o reales causados por las minas), un factor económico (reclamos de propiedad y aspiraciones de participación de las comunidades en los beneficios económicos de las minas ante la pasividad del gobierno), y un factor ecológico (preocupación por la conservación del ambiente y las fuentes de agua de las comunidades). Las poblaciones vecinas fueron caracterizadas por rasgos de personalidad que las tipificaban como morales, incompetentes y positivas. Estas percepciones son más positivas que las que tienen estudiantes universitarios respecto a la población peruana en general y representan condiciones favorables a la resolución de conflictos. Ni estos resultados ni las caracterizaciones de causas de los conflictos dependieron de la experiencia de conflicto de los gerentes. Esto se puede entender considerando que los contactos frecuentes que tienen los gerentes mineros entre sí probablemente promocionan la estandarización de sus visiones sociales. Por su parte, la geografía moderó la relación entre la experiencia de conflicto y las percepciones intergrupales, sugiriendo que los gerentes más afectados por los conflictos socioambientales fortalecieron sus estereotipos raciales en respuesta al desafío externo si estaban cerca de la línea ecuatorial o a gran altura sobre el nivel del mar.

*Palabras clave:* minería, conflicto socioambiental, gerentes, responsabilidad social.

## Introduction

In the 1990s, the global mining industry underwent an unprecedented expansion, emerging in countries which had never shown a history of mineral commerce; the registry of countries with mining activity increased from 105 in 1990 to 151 in 1994 (Acsehrad, Das Neves & Muñoz, 2010). This expansion was made possible by price rises of minerals in response to the increasing demand as well as by privatizations promoted by international financial institutions that facilitated foreign investment in the exploitation of previously inaccessible natural resources (Azamar & Carcaño, 2007). Latin America became the most important destiny of mining capital investment and a survey conducted by the Fraser Institute (2016) placed Peru as the top Latin American country in economic attractiveness considering its mineral reserves, followed by Chile, Mexico, and Colombia.

Mining activities not only represent substantial contributions to national economies but also play a positive role in the activation of subsidiary industries, growth of internal markets, and development of human resources in the territorial areas of influence of the mining projects during their effective lives (Santillana, 2006). However, the relationship between extractive industries and country development is far from simple. Whereas governments and some academic groups believe in their potential for development at national and local levels, critics of mining conclude that countries who depend on mining exports continue to show lower development rates (Bebbington, 2007a, 2007b), that indicators of development or quality of life have not improved in regions with long mining history (Ross, 2001), and that the rapid mining boom has imposed high social and environmental costs to local communities (McMahon & Remy, 2001).

## Mining and socio-environmental conflicts

The mining boom has been accompanied by socio-environmental conflicts that some have viewed as a series of events organized by interest groups and others have attributed to legitimate environmental concerns (Navarro & Pineda 2009). Diverse methods for assessing the environmental damage of mining are widely available (e.g., Damigos, 2006; Gorova, Pavlychenko & Borysovs'ka, 2013), mining projects can qualify for ISO14001 (Newbold, 2006), and governments generally require an Environmental Impact Report as a condition for granting permit to initiate a mining project. In Peru, the government regulates extractive activities in the context of neoliberal policies. Nonetheless, mining projects have been persistently confronted by environmentalist groups. Bebbington (2009; Bebbington & Bebbington, 2009) formulated diverse forms of environmentalism originated in different ways of perceiving the relationships between environment, society, and market. Conservationism seeks to conserve certain types of ecosystems, species, or biogeographic niches. Nationalist populist environmentalism is concerned with who has access to the natural resources and their monetary value and who exerts control on them; this type of environmentalism is nationalist because of its explicit objective of securing national control of the environment and the earnings derived from it. A third environmentalism, akin to Martínez Alier's (2002) "ecology of the poor", is the ecologism of the means to survival; this entails a concern for the quality of and access to the natural resources that sustain the life of the various population groups concerned, viewed as threatened by mine exploitation. The fourth environmentalism, called socio-environmental justice, is concerned with inequality; it has its roots in a notion of inequity in the

relationships between society and the environment and criticizes economic models that discriminate specific social groups. Finally, deep ecologism assigns greater value to ecosystems, ecological processes, species, and biodiversity than any other form of environmentalism; in fact, it assigns to nature the same right to live as to persons. A simpler classification is provided by Perlaviciute, Steg, Contzen, Roeser, and Huijts (2018, p. 4): “Energy projects may particularly have implications for four types of values: biospheric values, in which case people particularly care about protecting nature and the environment; altruistic values, which implies people mostly aim to safeguard the well-being of others; egoistic values, which implies safeguarding personal resources such as wealth and status; and hedonic values, which implies that people are especially seeking pleasure and comfort”.

The conflicts between mining companies and surrounding communities fearing environmental deterioration have increased at the rhythm of growth of the industry itself. A total of 63 socio-environmental conflicts have been reported in Ecuador and Colombia (Environmental Justice Atlas, 2016). There were 12 socio-environmental conflicts in Chile (INDH, 2016). The emblematic Mexican cases of Wirikuta and Cananea are well known (Azamar & Carcaño, 2007). A report of Peru’s National Ombudsman indicates that the number of socio-environmental conflicts increased from 21 in 2006 to 46 in 2016; of these, 65.1 % corresponded to conflicts related to mining activity and 15.8 % to exploitation of hydrocarbons (Defensoría del Pueblo, 2016). Recent gridlocks of giant mining projects Conga (Morales, Kleit, & Rees, 2018) and Tía María (Bedregal & Scott, 2013) had ample resonance in Peru’s media and polarized politicians. Understanding of these processes may be facilitated by knowledge that, in the Peruvian provinces with mining activity, 12 % of the population are in extreme poverty, 40 % are very poor, and 36 % are poor. Only 1 % of the population in Peruvian provinces with

mining activity achieve a satisfactory level of well-being. Hence, a key to the conflicts may reside in the contrast existing between the wealth of the mining investments and the poverty of the surrounding communities. In Peru, conflicts occur despite that the central government transfers a large fraction of the mining taxes to the subnational governments in the mining areas and encourages mining firms to assume an active role in local development (Arellano-Yanguas, 2011).

De Echave, Diez, Huber, Revesz, Lanata, and Tanaka (2009) combined sociological theories of resource mobilization and rational options with theories of social cohesion and identity construction to explain socio-environmental conflicts. The inception of mining into an ecosystem would cause macro-social changes characterized by the production of structural contradictions which deteriorate the quality of life. Simultaneously, changes in values and identities would create new aspirations and sensibilities and the ensuing feelings of relative deprivation would lead to processes of social mobilization which would materialize or not, depending on the perceived benefits and costs. De Echave et al. (2009) provided insights into the dynamics of social unrest as they applied their theoretical framework in analyses of four types of mobilization against mining projects in Peru. The literature on the topic has rapidly increased in recent years (e.g., Andreucci & Kallis, 2017; Arellano-Yanguas, 2011; Conde & LeBillon, 2017; Dupuy, Roman & Mougenot, 2015; Martínez-Alier et al., 2016; Muradian et al., 2011; Sosa et al., 2016; Ide, 2016). The most recent review (Morales, Kleit & Rees, 2018) assigns extraordinary importance to cultural differences between the mine owners and personnel vis-à-vis the local populations and provides a case study of the Conga conflict in Peru.

### **Psychological hypotheses**

Psychology has contributed strategies with the potential to lead to improved understanding

and management of environmental problems. A recent strategy emphasizes the role of emotions and their origins in the processes of resistance to change (Perlaviciute et al., 2018). Emotions are normal reactions of people to changes in the environment and the responses of either part of an environmental conflict to them “can be ineffective if they are based on inaccurate or erroneous assumptions about where these emotions come from and whether and how they can be addressed” (Perlaviciute et al., 2018, p. 2). At the base of such emotions are personal values that a company’s project or the public’s reaction to it violates or supports: biospheric values, altruistic values, egoistic values, and/or hedonic values. Virtually all the empirical studies of socio-environmental conflict involving the mining industry in Latin America have focused on the attitudes and behaviors of populations rising against mining projects. Contrariwise, virtually nothing is known about the reactions of their counterparts, the mining corporations, to the crisis that a socio-environmental conflict represents to them. The psychological principles formulated to explain public reaction to a project, however, may apply to managers as well. Thus, the present study addresses various possible responses of mining managers to socio-environmental crises following Perlaviciute et al.’s (2018) general principle that “emotions are evoked by the extent to which different project characteristics ... violate or support people’s core values” (p. 3).

### **Attribution of source of conflict**

How do managers perceive the origins of socio-environmental conflicts? As caused by the communities’ desire to preserve the environment, protect their sources of water, maintain their life style, participate in the economic benefits of the mine, respond to a political agenda, correct a mine’s actual or expected environmental errors? Corporations all over the world are interested in establishing and maintaining a favorable environmental repu-

tation and researchers frequently recur to attribution theory to understand the mechanisms used by firms to achieve this objective (Kumar, 2018). Socio-environmental conflicts can be viewed as crises that not only threaten to disrupt a corporation’s operations but also pose a reputational threat. The essential question in this context pertains to crisis responsibility. Was the crisis a result of external factors or something the organization could have controlled better? People search for the causes of events and make attributions influenced by the emotions associated with the nature of the events. Situational Crisis Communication Theory offers a framework for understanding the dynamics of responsibility attributions affecting organizations (Coombs, 2007). The reputational threat to a corporation augments as the attributions of crisis responsibility to the firm intensifies (Coombs & Holladay, 2002) and preventable crises have the most negative effects on organizational reputation (Claeys, Cauberghe & Vyncke, 2010). When managers select certain factors to emphasize, they are said to be framing the issue. A mining manager may frame the issue by emphasizing certain cues: whether or not certain external agent or force caused the crisis, whether the crisis was a result of accidental or intentional action, or whether the cause of the accident was technical or human error. Generally, he or she will assume one of three roles: victim, unintended agent, or purposeful agent. The present study tested the following hypothesis:

Hypothesis 1. Managers of mining corporations will attribute more responsibility of socio-environmental conflicts to external agents vis-à-vis mining activities depending on the extent of socio-environmental conflict experienced by the mine.

### **Intergroup perception**

How do managers perceive the surrounding population of a mine, usual base of socio-environmental mobilizations? Are such perceptions influenced by the presence of socio-en-

vironmental conflict? Social psychologists distinguish between the in-group (to which one believes/feels to belong) and the out-group (the differentiated “others”). A person belongs to several in-groups: the family, the firm, the career, the club, the nation. Out-groups that possess the power to harm the in-group may be a threat to its very existence. The social mobilizations against mining can be conceived as an instance of this severest threat; to the extent that the out-group succeeds, the mine could be closed and disappear as a social entity. W. G. Stephan’s revised intergroup threat theory distinguishes between realistic and symbolic threats (Stephan, Ybarra, & Morrison, 2009). The human groups behind socio-environmental conflicts represent a realistic threat to members of the mining organization, who may feel exposed to the two types of realistic threat defined by Stephan and Renfro (2002): threat to the individual and threat to the group as a whole. Realistic group threats encompass potential damage to the group’s power, resources, and welfare. Realistic individual threats include threats to health or personal security as well as economic loss or deprivation of valued resources. Research has shown that a range of responses follow the perception of realistic threat from an out-group. Stephan and Stephan (2000) originally concentrated in changes in attitudes toward the out-group. Subsequently, impacts on other attitudes and behaviors were studied. Of particular interest to the topic of this article are the possible cognitive changes among mining managers. It has been shown that the perception of threat is followed by changes in stereotypes (Quist & Resendez, 2002), dehumanization of the out-group (Shamir & Sagiv-Schiffer, 2006; Skitka, Bauman & Mullen, 2004), and other cognitive biases (Ybarra, Stephan, Schaberg, 2000) that usually lead to increased conflict. Persons of higher social status undergo more intensive changes in their perceptions of the out-group than persons of lower status (Riek,

Mania & Gaertner, 2006). In the present study, the presence of the simplest response was tested:

Hypothesis 2. Managers of mining corporations will attribute negative traits to the mine’s surrounding population depending on the extent of socio-economic conflict experienced by the mine.

### Geographical variables

Latitudinal psychology (Van de Vliert & Van Lange, 2019) has identified latitude as an important source of psychological outcomes and has proposed extremes of temperature and rain as the possible mediators. Alternative economic (Andersen, Dalgaard & Selaya, 2016) and psycho-geographic theories (León, 2019) focus on UV radiation. The closer to the equatorial line is a population, the poorer, the sicker, the less educated, and the less intelligent are its members, both at worldwide level (Andersen et al., 2016; León & Burga-León, 2015) and within Peru (León, 2012, 2015, 2019; León & Burga León, 2014), apparently due to greater exposure to ultraviolet radiation (Andersen et al., 2016; León, 2018a, 2018b; León & Antonelli-Ponti, 2018; León & Burga-León, 2018; León & Hassall, 2017). Another geographic variable with important socioeconomic consequences is altitude above sea level. Terrain ruggedness makes agriculture, construction and transport more difficult (Nunn & Puga, 2012) and high altitude exposes the population to greater ultraviolet radiation (León & Avilés, 2016). By making local populations poorer, and thus prone to see greater inequity compared to the wealth of miners and their employees, latitude and altitude can be expected to enhance socio-environmental conflicts related to mining. The following hypothesis was tested:

Hypothesis 3. Latitude and altitude will moderate the relationships expected in hypotheses 1 and 2.

## Method

### Subjects and procedure

Only 49 mining corporations are registered in the Society of Mining, Petroleum, and Energy of Peru. A formal letter of invitation was sent to Corporate Social Responsibility managers of the 49 mining firms inviting them to fill in a 20-minute questionnaire (December 2017); they were offered anonymity and 43 of them provided their informed consent and completed the questionnaire in the presence of one of the investigators at company offices. 100 % of respondents were male, most of them middle-aged.

### Measurements

#### *Socio-environmental conflict*

Information on whether any project of the organization faced socio-environmental conflict in each year from 2008 through 2017 was obtained from annual reports of the National Ombudsman (Defensoría del Pueblo, 2008-2017). The mining organization was the unit of analysis throughout the study on two grounds: because the study had one informant per organization and because CSR is not handled per project in the Peruvian mining industry.

#### *Attribution of source of conflict*

A list of 11 possible causes of socio-environmental conflicts was derived from the literature, from “Concerns of communities regarding the use of water” and “Political interests external to the communities” to “Damage caused by the mining industry” and “Mining companies’ breach of compromises”. The question was framed in reference to the general case and managers were asked to provide an opinion using a 5-point Likert scale (Never: 1, Always: 5): “Several statements regarding mining conflicts appear

in the following lines. Please, answer tracing a circle around the number (1, 2, 3, 4 or 5) corresponding to the opinion that best reflects yours. (There are no correct or incorrect answers). 1. The possession of a territorial space that communities consider theirs. Etc.”

#### *Intergroup perception*

The National Autostereotypes Scale (Espinoza, Acosta, Valencia, Vera, Soares, Romero & Beramendi, 2016) encompasses 22 items formed by adjectives and their antonyms (e.g., honest-dishonest, sociable-non sociable). The task is presented to the informant as a choice to be made from a gradation of 7 points between an adjective and its antonym. Studies in several Latin-American countries have shown that various versions of the scale satisfy common requirements of construct validity (Espinoza et al., 2016; Genna & Espinoza, 2012). Cueto (2017) revised the scale linguistically and expanded it to reach 29 items. A pilot study in Lima led to the exclusion of five items due to difficulties to ascertain a positive versus negative evaluation and exploratory and confirmatory factor analyses of responses from university students in Lima (N = 401) and Ayacucho (N = 408) yielded three reliable dimensions: Moral (good people, hard-working, trustworthy, honest, brave, supportive, pacific, environmentalist, not resentful), Competent (successful, glad, capable, intelligent, enterprising, sharp, creative, sociable), and Negative (corrupt, unpatriotic, backward, discriminator, alienated, unreliable). A further item (not in the previous lists) was discarded to improve the reliability of one of the dimensions and the scale was rechristened as Collective Stereotypes Scale.

#### *Geographic variables*

Measurements of latitude were obtained for each mining project, using district as referent, from Latitude and Longitude of a Point (2018). Altitude data came from Peru’s

National Institute of Statistics and Informatics (2018).

**Other data**

The questionnaire also included questions about the informant (age, sex, education, time with the organization) and questions about the corporation (presence in the Lima Stock Exchange, assets, and national-international capital).

**Results**

**Preliminary analyses**

Only two firms had more than one mining project (none exceeded two) in the 2008-2017 period. Considering the number of years under conflict, the firms were categorized into Low

Conflict (0-1 year, N = 14), Medium Conflict (2-7 years, N = 15), and High Conflict (8-10 years, N = 14). Conflict level correlated .96 ( $p < .001$ , two-tailed) with raw number of years under conflict. Only 12 firms had their shares transacted in the Lima Stock Exchange; 14 were national and 29 international companies. The 11 items entailing source of socio-environmental conflicts were submitted to an exploratory factor analysis using Principal Components Analysis; the resulting 3-factor solution explained 63 % of the variance and suggested a structure whose model fit was satisfactory according to the semi-confirmatory FACTOR program (Ferrando & Lorenzo-Seva, 2017) using unweighted least squares (see **Appendix 1**) as well as according to a confirmatory factor analysis using maximum likelihood in AMOS 24.

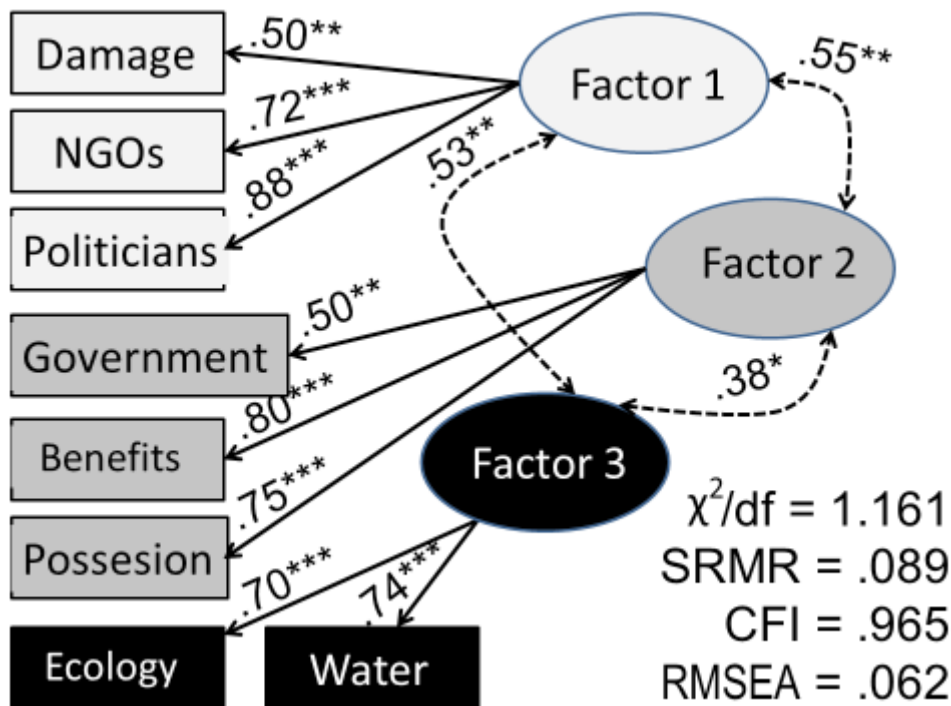


Figure 1. Results of structural equation modeling of managers’ causal attributions of socio-environmental conflicts.

Notes: Coefficients relating factors to observable variables are provided. Dotted arrows indicate correlations between factors. Remainder information pertains to model fit.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , two-tailed, after bootstrapping.



Factor 1 was defined by “NGO’s interests served by communities”, “Political interests external to communities”, and “Damage caused by mining activity”. Factor 2 entailed “Possession of territorial space that communities consider is theirs”, “Communities’ desire to participate in economic benefits of mining projects”, and “Government’s passivity in preventing conflicts”. Factor 3 encompassed “Communities concern with the use of water” and “Communities’ desire to preserve the environment and avoid ecological damage”. These dimensions presented adequate reliability (Cronbach’s alpha) despite the small numbers. .72, .70, and .68, respectively. Considering that factors 1 and 2 encompassed three items each whereas Factor 3 encompassed only two items, averages rather than sums were computed to make the factors comparable. The same was done with the Collective Stereotypes Scale’s dimensions. The reliabilities of the latter were satisfactory among the managers:  $\alpha = .82$  for Moral,  $\alpha = .74$  for Competent, and  $\alpha = .67$  for Negative.

Managers’ age was positively correlated with education and time in the organization and decreased with mine’s altitude above sea level. Time with the firm, in turn, was associated with presence in Lima Stock Exchange and with Factor 2 and decreased with mine’s altitude above sea level. Conflict level was greater at higher altitude, where international

firms had a greater presence, whereas assets and presence in the Lima Stock Exchange were greater with distance from the equator. The three conflict factors were importantly correlated, as were the three traits, as expected considering common method variance (Podsakoff, McKenzie & Podsakoff, 2012). The Negative trait correlated positively with Factor 3 and negatively with the Competent trait. “Investing in infrastructure for the communities” was the most frequently chosen among the five most demanding CSR activities (56 %). Managers who selected this item attributed socio-environmental conflicts to economic interests of surrounding communities, viewed surrounding populations as less competent and more negative, and had more operations in northern than southern Peru.

### Hypotheses 1 and 3

It can be seen in Table 1 that the managers attributed the causes of socio-environmental conflicts mainly to the external political agents encompassed by Factor 1; attributions to mining firms came in 8<sup>th</sup> and 9<sup>th</sup> places. All the partial correlations between managers’ ratings and the firm’s level of conflict were non-significant. Factor 3 ( $M = 3.21$ ,  $SD = .80$ ) presented lower scores than Factor 1 ( $M = 3.39$ ,  $SD = .82$ ) and Factor 2 ( $M = 3.43$ ,  $SD = .73$ ), but the differences were not significant.

**Table 1**

*Managers’ mean ratings of generality of causes of socio-environmental conflicts and ratings’ partial correlation with conflict level.*

Item	M	r
Communities’ interest in participating in project’s benefits	4.09	-.15
Passivity of government to prevent conflicts	4.02	.18
Political interests external to the communities	3.65	-.00
Communities’ concern with water utilization	3.58	.17
Possession of territorial space communities consider is theirs	3.47	-.04
NGO’s interests which mobilize communities	3.40	.17
Communities’ desire to protect their means of survival	3.16	-.19

Item	<i>M</i>	<i>r</i>
Damage caused by mining activity	3.12	-.10
Mining firms' failure to honor commitments	3.00	.02
Communities' desire to protect the environment	2.84	-.21
Communities' desire to avoid changes in their traditions	2.74	-.12

Notes: Ratings were provided on a five-point Likert scale (from Never to Always). Conflict Level entails the duration of conflicts experienced by the mines in 2008-2017. The variables set constant were: respondent's age, education, time with organization, firm's assets, national-international, in Lima Stock Exchange, absolute latitude, and altitude above sea level.

The results of hierarchical multiple regression analyses shown in Table 2 failed to uphold hypotheses 1 and 3: neither conflict level

nor its interactions with latitude or altitude explained managers' perceptions of sources of socio-environmental conflicts.

**Table 2.**

*Standardized coefficients from hierarchical multiple regression of three types of conflict on nine variables (step 1) and two interactions (step 2).*

Predictor	Conflict type					
	Factor 1		Factor 2		Factor 3	
	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$
<b>Step 1</b>	.21		.22		.13	
Age		.07		-.42+		.05
Education		-.02		.09		.01
Time in the organization		.06		.43*		.13
Conflict level		-.16		-.03		.07
Assets		.13		.03		.18
International firm		.39+		.24		-.08
In Lima Stock Exchange		.27		.16		-.00
Absolute latitude		-.13		-.15		-.34
Altitude above sea level		-.01		.02		.07
<b>Step 2</b>	.00		.01		.04	
Conflict level x Absolute latitude		.25		.41		-.90
Conflict level x Altitude above sea level		.03		.31		-.03
Total R <sup>2</sup>	.22		.24		.17	
n	43		43		43	

Notes: Ratings were provided on a five-point Likert scale (from Never to Always). Conflict Level entails the duration of conflicts experienced by the mines in 2008-2017. The variables set constant were: respondent's age, education, time with organization, firm's assets, national-international, in Lima Stock Exchange, absolute latitude, and altitude above sea level.

\* $p < .05$ , two-tailed, + $p < .10$ , two-tailed, after bootstrapping.

Only International Firm increased Factor 1 with borderline statistical significance. Managers' ratings entailing Factor 2 decreased

with age but increased with time in the organization. No predictor was able to account for Factor 3 ratings.

### Hypotheses 2 and 3

The Moral factor ( $M= 20$ , 95 % CI = 3.94; 4.45) presented higher scores than the Competent ( $M= 3.43$ , 95 % CI = 3.23; 3.64) and Negative factors ( $M = 3.69$ , 95 % CI =

3.45; 3.93), but the differences between the latter were not significant. Main effects did not explain the attribution of population traits to surrounding communities, but interactions did, upholding Hypothesis 3 (Table 3).

**Table 3**

*Standardized coefficients from hierarchical multiple regression of three population traits on nine variables (step 1) and two interactions (step 2).*

Predictor	Population trait					
	Moral		Competent		Negative	
	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$
<b>Step 1</b>	.10		.22		.21	
Age		-.08		.36		.36
Education		.08		-.11		-.13
Time in the organization		.08		-.09		-.26
Conflict level		-.15		.10		.27
Assets		-.04		.13		.06
International firm		.13		-.10		.08
In Lima Stock Exchange		.07		-.14		.00
Absolute latitude		.22		-.24		-.31
Altitude above sea level		-.04		-.10		-.15
<b>Step 2</b>	.13+		.16*		.13+	
Conflict level x Absolute latitude		.61		-1.53*		-.63
Conflict level x Altitude above sea level		-1.41+		.77		1.41*
Total R <sup>2</sup>	.23		.31*		.34+	
n	43		43		43	

Notes: Ratings were provided on a five-point Likert scale (from Never to Always). Conflict Level entails the duration of conflicts experienced by the mines in 2008-2017. The variables set constant were: respondent’s age, education, time with organization, firm’s assets, national-international, in Lima Stock Exchange, absolute latitude, and altitude above sea level.

\* $p < .05$ , two-tailed, + $p < .10$ , two-tailed, after bootstrapping.

As for the interactions, the correlation between Conflict Level and the Competent trait decayed from low to high latitude; the correlation between Conflict Level and the Moral trait decayed with altitude; and the correlation between Conflict Level and the Negative trait increased with altitude.

### Discussion

This study was purported to throw light into mining managers’ causal attributions of socio-environmental conflicts. A novel finding emerging from the research was the 3-factor structure of managers’ causal attributions of socio-environmental conflict. Factor 1

was political; it entailed politicians and NGOs taking advantage of possible environmental damage caused by mining activity. Factor 2 was economic; it implied communities' claims of territorial property and demands to participate in the mine's benefits. Factor 3 was ecological; it involved protection of the environment and utilization of water resources. These concepts are simpler than Bebbington's (2009) taxonomy of environmental movements and have the potential to introduce order into the processes of conflict resolution promoted by governments. The small number of cases, considering inadequate across the board by some methodologists (e.g., Bagozzi & Yi, 2012), may be a source of concern, although the doubts can be dispelled to a certain extent taking into account that the commonalities among the items could have compensated for the low number of cases (MacCallum, Widaman, Zhang & Hong, 1999) and that the sample size was close to the minimum recommended of 50 (Iacobucci, 2010, p. 92). Moreover, three different modalities of analysis yielded virtually the same results. Nonetheless, future studies should determine whether the emerging 3-factor structure of causal attributions of socio-environmental conflict is robust across sample sizes, industry sectors, countries, and management levels.

The study tested the hypothesis that the interest of corporations in establishing and maintaining a favorable environmental reputation would lead mining managers to externalize crisis responsibility and this would be strengthened by the extent of conflict experienced by the firm in the past 10 years. The study, however, revealed rigid attributions of cause which did not vary as a function of experience of socio-environmental conflict; this can be understood considering that contacts between mining managers are likely to promote a standardization of social views. On the other hand, the results suggested that managers of international firms, compared to managers of national firms, tend to emphasize the political causes, younger managers

make more economic attributions than older managers, and longer job tenure at the organization is associated with stronger economic attributions; this apparent contradiction can be understood considering that the effect of tenure is calculated holding age constant. The findings suggest that, whereas managers' views of political and economic causes depend on the national or international origin of the firm and managers' age and tenure, the views entailing ecological causes are more uniform.

The study also tested the hypothesis that the experience of conflict would be associated with some typical reactions to realistic group and individual threats from out-groups. Against the expectations, the experience of socio-environmental conflict did not affect managers' attributions of personal characteristics to the mines' surrounding populations. Managers viewed the surrounding populations as more moral than competent or negative regardless of the level of conflict experienced by the firm. These perceptions can be compared to those of other population groups in Peru extant in Cueto's 2017 dissertation. Compared to mining managers' perceptions of surrounding populations, university students viewed Peruvians as less moral ( $M = 3.81$ ,  $SD = .81$ ,  $t = -3.06$ ,  $p = .002$ , two-tailed), more competent ( $M = 4.93$ ,  $SD = .85$ ,  $t = 11.33$ ,  $p = .000$ , two-tailed) and more negative ( $M = 4.45$ ,  $SD = .93$ ,  $t = 8.69$ ,  $p = .000$ , two-tailed). That is, mining managers showed more positive views of surrounding populations than university students did of Peruvians, with the exception of the competence trait. The latter can be understood considering that mines' surrounding populations reside in rural communities and, hence, exhibit poorer levels of education. The present results regarding intergroup perceptions also have a potential of use in the conflict resolution tables promoted by the Peruvian government.

On the other hand, geography emerged as an important moderator of the relationship between the level of socio-environmental conflict experienced by the mining firm and

managers' perceptions of the surrounding populations. Greater attributions of competence were associated with the experience of conflict only when the mine was located in northern Peru. Since lower intelligence of the general population has been demonstrated for northern than southern Peru (León, 2015; León & Burga León, 2014), this finding suggests that the emergence of conflict may have modified managers' perception of the surrounding population as incompetent, which would have not occurred in southern Peru because its population was not seen in such negative terms. In turn, the presence of socio-environmental conflict emerged associated with a view of the surrounding population as less moral, more negative at high altitude. Since national/regional stereotypes in Peru assign weaker morality and more negativity to peoples residing at high altitude, who are mainly Amerindians (Huayhua, 2014; Weismantel & Eisenman, 1998, these results suggest that mining managers more affected by socio-environmental conflict strengthened such stereotypes in response to the external challenge.

## Conclusions

Clearly distinguishable political, economic, and ecological causes of socio-environmental conflict exist in the minds of mining managers; these concepts have a potential for use as tools to organize discussions in the conflict-resolution encounters of miners and communities promoted by governments. Managers' perceptions of the morality and positivity of mines' surrounding populations represent favorable conditions for conflict resolution, whereas viewing them as incompetent does not because it implies their potential manipulability by politicians and NGOs.

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