

# Self-Efficacy and Intrinsic Motivation Guiding Environmental Behavior

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## Abstract

The authors examine whether self-efficacy relates to the environmentally responsible behavior of recycling and whether intrinsic motivation serves to mediate the relationship between self-efficacy and recycling. The authors measure those constructs, along with extrinsic motivation and the self-regulatory behaviors of satisfaction with and intentions toward recycling. Residents ( $n = 1,501$ ) of 55 localities in Cordoba Spain are interviewed at home. Results show that all variables are positively related to self-reported recycling, except that extrinsic motivation is negatively related to recycling. As the authors hypothesize, the relationship between self-efficacy and recycling diminishes when intrinsic motivation is added to the model, which suggests that intrinsic motivation accounts for some of the relationship between self-efficacy and recycling. With the use of structural equation modelling, all variables, except extrinsic motivation, provide a good model fit; explained variance in reported in-home recycling is also substantial (adjusted  $R^2 = .45$ ). The mediational analysis provides insight regarding the dynamics of motivation; the model suggests that self-efficacy relates to recycling directly, by giving rise to intrinsic motivation, which in turn relates to recycling.

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self-efficacy, intrinsic motivation, environmentally responsible behaviors, recycling

This article analyzes the motivation for proenvironmental behavior as an important subject matter, given the current global issues of climate change, a concern that is shared by most countries (Eisler, Eisler, & Yoshida, 2003). According to Schultz and Zelezny (1999), it is commonly thought that just as people damage the environment they can also help to protect it. On the basis of this concern, in recent years there has been a considerable increase in research aiming to identify the motivational variables that predict environmentally responsible behavior (ERB; see e.g., Bamberg & Möser, 2007; Geller, 2002; Homburg & Stolberg, 2006; Meinhold & Malkus, 2005; Werner & Makela, 1998). These studies highlight the global recognition of the potential damage to the environment caused by humans and the need for efforts to counter and prevent such damage. The importance of using motivational theories and processes to study proenvironmental behavior has been noted by De Young (2000) and Ryan and Deci (2000). The incorporation of motivational variables into explanations of proenvironmental behavior could help improve our understanding of such behavior and explain the observed inconsistency in individuals' actions. Because of these inconsistencies, it is difficult to offer precise predictions of behavior (Thøgersen, 2004).

In recent years, research into the role of self-efficacy in explaining behavior has taken center stage (Vancouver, Moore, & Yoder, 2008; Zimmerman & Schunk, 2003). Self-efficacy can be defined as the belief in one's own capacity to organize and guide the courses of action required to tackle certain situations in the immediate future (Wood & Bandura, 1989, p. 408). Vancouver et al. (2008, p. 36) suggested that "self-efficacy is arguably the most popular form of expectancy belief in the applied psychology literature," and other scholars claim that "self-efficacy has proven to be one of the most focal concepts in contemporary psychology research" (Judge, Jackson, Shaw, Scott, & Rich, 2007, p. 107). The role of self-efficacy has been analyzed in contexts where behavioral results can be quantified (e.g., academic: Pajares & Urdan, 2006; health: Bandura, 2005; sporting: Feltz, Short, & Sullivan, 2008; and organizational contexts: Combs & Luthans, 2007). However, fewer studies have analyzed the role of self-efficacy in prosocial and altruistic behaviors, for which a quantifiable reward is either not received or received after a substantial period of time has elapsed.

Caprara and colleagues (Caprara & Bonino 2006; Caprara & Steca, 2007) asserted the existence of *prosocial agency* through which people tend to perform behaviors of sharing, helping, or looking after others. For this type of behavior to take place, people must feel able to perform the acts and manage the emotions that it generates. Ramus and Killmer (2007) argued that proenvironmental behavior is a special type of prosocial behavior (e.g., a behavior that is directed toward and performed with the intention of promoting the welfare of an individual, group, or organization). To carry out these acts and make their abilities available for the well-being of others, it is not enough for people to perceive that they have the emotional and social abilities required for prosocial behavior. The perception of capacity must be accompanied by the intrinsic motivation that the behaviors generate. Intrinsic motivation can be defined as the desire to expend effort based on interest in and enjoyment of the task itself, whereas extrinsic motivation is the desire to expend effort to obtain outcomes external to the task, such as reward or recognition (Grant, 2008, p. 49). Caprara and Bonino (2006) claimed that the capacity to act for the benefit of others contributes to intrinsic or vital satisfaction, whereas Grant (2008) affirmed that intrinsic motivation moderates the association between prosocial motivation and behavior. Conceptually, the proposed relationships between self-efficacy and intrinsic motivation are not new in the literature (Bandura, 1982), but the mediational role of intrinsic motivation in the association between self-efficacy and proenvironmental behavior has yet to be assessed.

## **Self-Efficacy Guiding Environmental Behavior**

As indicated previously, out of all the different self-regulatory mechanisms of behavior, Bandura (2002) maintains that self-efficacy is the best predictor of the acts we choose to perform and for which a greater level of effort is required. The studies reviewed by Bandura (1997) show that self-efficacy judgments affect the goals people set for themselves and their affective reactions to the levels of performance achieved in very different contexts.

Given that judgments of self-efficacy or expectations of capacity derive from an individual's self-evaluation of the performance levels attained in the past, there is a strong correlation between past performance and self-efficacy (Vancouver, Thompson, & Williams, 2001). However, there are also other mechanisms through which self-efficacy has a direct effect. Self-efficacy helps individuals focus their attention and reduces surrounding distractions (Kanfer & Ackerman, 1996), influences the level of perceived difficulty of

the goals selected and the level of commitment to those goals (Locke & Latham, 2002), efficiently allocates resources toward the accepted goals (Vancouver et al., 2008), and facilitates the search for more efficient strategies (Taberero & Wood, 1999). Therefore, despite the existence of mechanisms of motivation that can guide our actions, such as goals or incentives, if individuals do not feel capable of performing an act, however high the reward, they will not do so and will not be able to persist in the face of difficulties (Bandura, 1997). They must feel able to carry out the act at a certain point in time and to a specific level.

Perceived self-efficacy influences cognitive functioning through its impact on self-satisfaction with personal development and the demands of the goals selected. Bandura (1997) has shown that individuals who initially doubt their capacity feel dissatisfied with themselves and their achievements, and they are highly likely to lose interest in the task. Similarly, they will tend to avoid change and stick to goals they are certain to achieve. By way of contrast, the higher their perception of self-efficacy, the greater the changes in their chosen goals (Earley & Lituchy, 1991). Given the theory and research reviewed above, we suggest the following hypotheses:

*Hypothesis 1a:* Individuals with high self-efficacy judgments will set more challenging goals and feel more satisfied with environmental acts than individuals with a lower perception of their efficacy to perform such acts.

*Hypothesis 1b:* Individuals with high self-efficacy judgments will engage in more proenvironmental behaviors than individuals with a lower perception of their efficacy to perform environmental acts.

## **Intrinsic Motivation Guiding Environmental Behavior**

By analyzing the reasons individuals choose, perform, and maintain ERB, Kasser and Ryan (1996) examined the content of the goals that people set for themselves, distinguishing between intrinsic and extrinsic motivations. Intrinsic motivations aim to satisfy psychological needs directly in terms of relationships, autonomy, competence, self-acceptance, affiliation, and a sense of community or health. Extrinsic motivations, however, refer to obtaining some kind of reinforcement or social recognition, such as economic success, image, or popularity. These kinds of motivations are all proposed in the self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2000;

Sheldon, Elliot, Kim, & Kasser, 2001; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

The external approach assumes that people engage in ERB to gain maximum benefit for themselves, through personal interest or simply to keep up with custom, as a course of habit, or to satisfy a social norm. On the basis of the economicist perspective of functional analysis of behavior, it is reasonable to assert that the consequences of behavior are the motivating factors for such behavior and to analyze the effect of incentives and penalties to promote or modify ERB (Geller, 2002). For example, in relation to gasoline consumption, it has been observed that reinforcement is an effective way of reducing consumption and enhancing efficient use (Syme, Nancarrow, & Seligman, 2000). The efficacy of this approach has also been observed in relation to saving water, recycling glass, and many other ERBs (Corral-Verdugo & Frias, 2006). However, research has shown that, although incentives or punishments can be useful when generating ERB, they have almost no effect on the duration of change in the long term or the permanence of change when contingencies disappear, even when intermittent reinforcement is applied (Dwyer, Leeming, Corben, Porter, & Jackson, 1993; Levitt & Leventhal, 1986; Srivastava, Locke, & Bartol, 2001).

In the internal approach, researchers focus their interests and actions on internal motivations, values, beliefs, or attitudes that guide the actions of individuals or groups (Hartig, Kaiser, & Bowler, 2001). Certain authors (Kalinowski, Lynne, & Johnson, 2006) consider that people's personal interest in performing ERB is the key to explaining environmental motivation. In the same direction, Corbett (2005) maintains that personal interests as well as values and beliefs (altruism, personal norms, participation, possibility of choice) would need to be present to achieve ERB. When an individual engages in a certain behavior purely to obtain intrinsic satisfaction, the association lies more with having a personal interest in the behavior rather than having an ecocentric or anthropocentric interest; the individual simply feels satisfied by carrying out the act. Considering that these actions are chosen freely by the individual, there is a kind of relationship with altruism; a certain level of sacrifice is implied, but high levels of personal satisfaction are achieved. Given the theory and research outlined above, we suggest the following hypothesis:

*Hypothesis 2:* Individuals with high intrinsic motivation will engage in more proenvironmental behaviors than individuals with lower intrinsic motivation.

## Mediational Role of Intrinsic Motivation on Self-Efficacy and ERB Relationships

The power of self-efficacy as intrinsic reinforcement has been highlighted by De Young (2000), who indicates that we must not assume that because people know *what* to do, they ought to know *why* they should do it and *how* to behave. The key lies in the fact that when individuals feel capable of carrying out a certain kind of behavior, they experience an intrinsic satisfaction resulting from their own judgments of competence, which promotes choice and the generalization of new behaviors and personal development. Drawing a parallel with the review carried out by De Young, intrinsic motivation would be the satisfaction of having certain competences and engaging in responsible consumption, whereas extrinsic motivation would be based on the satisfaction of maintaining a sense of community. Both motivations can be activated depending on the type of activities or behaviors that make individuals focus their efforts on achieving a certain goal at a specific time. Therefore, on the basis of these arguments and the literature outlined above, we propose the following hypothesis:

*Hypothesis 3:* The relationship of self-efficacy judgments with pro-environmental behavior will be mediated by intrinsic motivation.

The study reported here uses path analysis to show the impact of self-regulatory mechanisms and intrinsic and extrinsic motivations on the explanation of ERB. The expected order of the relationships between all variables has been previously outlined in the literature reviewed above: Self-efficacy will have an influence on goals and satisfaction (Hypothesis 1a), and these will explain ERB (Hypothesis 1b) across the mediational role of intrinsic motivation (Hypotheses 2 and 3).

## Method

### *Participants*

A questionnaire was administered to 1,501 people, who were randomly and proportionally selected from a population of 360,000 inhabitants (120,000 households) residing in 55 localities in Cordoba, Spain. The quality of the recycling service (e.g., infrastructure, given as the number of containers per inhabitant, timetables, prices, information, and cleaning frequencies) offered by a public organization was the same in all localities. Most participants

(72.1%) were women, and the total sample was spread over four age brackets: under 30 (29.92%), 31 to 50 (28.75%), 51 to 65 (19.91%), and over 66 (21.69%). Where education was concerned, 35.9% stated that they had completed primary education, 23.1% compulsory secondary education, 16.7% upper secondary education, 7.4% higher education, and 16.9% stated they had received no education at all. As for employment, 43.1% of the sample were employed, 23.2% retired, 17.3% worked in the home, 11.9% were university students, and 4.4% were unemployed.

### Task and Procedure

A questionnaire was designed to evaluate the variables studied. The questionnaire first presented the items related to sociodemographic characteristics and then gave three questions related to each of the three environmental behaviors examined (glass, paper, and packaging). The third section included measures of intrinsic and extrinsic motivation and measures of self-regulatory variables (3 items for self-efficacy, 2 items for satisfaction, and 4 items for self-set goals).

Four university students were trained as interviewers to administer the questionnaires in all 55 localities and were awarded a grant from the public organization that manages the recycling service. Data collection took place more than 2 months. Each interviewer visited respondents' homes to administer the household questionnaire. The number of participants from each locality was allocated in proportion to population size. For this purpose, a working plan was established, distributing the number of questionnaires per interviewer and locality, attempting to ensure that data were gathered from both the center (62%) and outskirts of each locality. The average time taken to complete the questionnaire was 30 minutes. For some questions, interviewers showed cards with a response scale for each question to facilitate respondents' answers (e.g., for the measure of self-efficacy, the card showed a 10-point scale whose response scores ranged from 1 = *not at all confident* to 10 = *totally confident*). To verify the validity of the data collected, the responses of 10% of the questionnaires collected were checked by telephone. For this reason, interviewers asked participants' for their private telephone numbers after completing the questionnaires.

### Measures

*Intrinsic and extrinsic motivation.* To discover the *reasons for past recycling behaviors*, respondents were asked to identify the main reasons that

motivated their behavior in terms of separating waste in the home. They were required to identify their motivations according to the motivational continuum drawn up by Deci and Ryan (2000), using 6 response options that included 3 reasons relating to *extrinsic motivation* (because I have the possibility of . . . receiving a reward . . . avoiding a penalty, or . . . gaining social acceptance) and 3 reasons relating to *intrinsic motivation* (because I have the possibility of . . . contributing to something worthwhile, . . . enjoying doing it, or . . . contributing to the collective good). These reasons were similar to the intrinsic motivation scale developed by Grant (2008). Participants were required to indicate whether each of the 6 reasons had motivated their ERB. The total number of motives (extrinsic and intrinsic) that the participants claimed were decisive factors in their behavior provided the score for each variable, and the scores ranged from 0 to 3. The correlation between intrinsic and extrinsic motivation was negative and significant ( $-.46$ ), coinciding with the trend observed in previous studies (Pelletier, Tuson, & Haddad, 1997; Sherman & Smith, 1984).

*Self-efficacy for recycling behavior.* This measurement of self-efficacy was created following the instructions of the guide to constructing self-efficacy scales (Bandura, 2006). The perception of the capacity to carry out each of the specific recycling acts was evaluated using 3 items: (1) "To what extent do you feel capable of separating all the paper and cardboard generated in your home and taking them to their respective containers?" (2) "To what extent do you feel capable of separating all the glass. . . ?" (3) "To what extent do you feel capable of separating all the packaging. . . ?" Participants were required to reflect on their levels of confidence using a 10-point scale, where response scores ranged from 1 = *not at all confident* to 10 = *totally confident*. The Cronbach's alpha for this scale was .91.

*Satisfaction with recycling behavior.* To evaluate the level of satisfaction experienced through the three types of recycling activities (glass, paper, and packaging), participants were asked how satisfied they had felt when carrying out each of these activities in the past and how satisfied they would feel by carrying them out in the future. Responses were indicated using a 10-point scale, with scores ranging from 1 = *not at all satisfied* to 10 = *totally satisfied*. The Cronbach's alpha for this scale was .95.

*Self-set goals for recycling behavior.* Four items were constructed by taking into account the intention to carry out each of the selected behaviors in the immediate future: (1) "Realistically speaking, at what level would you rate your current recycling habits?" (2) "What level would you attempt to achieve in the near future?" (3) "To what extent would you like to try harder to do it better?" (4) "To what extent do you think you will try to maintain this

goal in the future?" Participants presented their answers using a 10-point scale, where responses ranged from 1 = *none* or *not at all* to 10 = *all the time*. The mean response score for each item for all three behaviors constituted the score for each variable. The Cronbach's alpha for this scale was .93.

**Self-reported recycling behaviors.** To calculate proenvironmental behavior, 3 items were created to evaluate the level at which the individual engaged in recycling behavior vis-à-vis paper, glass, and packaging: (1) "Do you separate paper and cardboard from the rest of the waste?" (2) "Do you separate glass from the rest of the waste?" (3) "Do you separate plastics, cans, and cartons from the rest of the waste?" Participants indicated their answers on a 5-point Likert-type scale, with response items ranging from 1 = *never* to 5 = *always*. A single variable was created using the mean score of the self-reported behaviors. The Cronbach's alpha for this scale was .84.

## Data Analysis

The set of data used to address the aims of this study was analyzed as follows. First, the descriptive and correlational analyses referring to the measures of *self-reported environmental behaviors*, together with the self-regulatory and motivational measures (*self-efficacy for environmental behavior*, *self-set goals*, *environmental satisfaction*, *extrinsic and intrinsic motivation*) were conducted to explore the relationships. These correlational analyses were used to assess the relationship of self-efficacy and intrinsic motivation with both the behaviors carried out and the motivation generated (Hypotheses 1a, 1b, and 2). Second, a regression analysis was used to evaluate the mediational role of intrinsic motivation on the relationship between self-efficacy and environmental behavior (Hypothesis 3). And finally, an explanatory model to explain environmental behavior was tested by means of path analysis. Structural equation modeling with maximum likelihood estimation was used to test the fit of the research model. Multiple fit indices were used to assess the adequacy of the estimated model: the Bentler-Bonett normed fit index, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA).

## Results

The sociodemographic variables evaluated showed no relationships with the other variables analyzed. Overall, the results provide support for the hypotheses about the relationship of self-efficacy and intrinsic motivation with ERBs, and the mediational role of intrinsic motivation in this relationship.

**Table 1.** Means, Standard Deviations, Reliability Coefficients, and Correlations for All the Variables Studied

	Mean (SD)	Minimum- Maximum	1	2	3	4	5	6
Extrinsic and intrinsic motivation								
1. Motives— extrinsic motivation	0.24 (.45)	0-2	—					
2. Motives— intrinsic motivation	1.02 (.55)	0-3	-.456**	—				
Self-regulatory mechanisms								
3. Self-efficacy for recycling behavior	6.84 (1.98)	1-10	-.128**	.293**	$\alpha = .91$			
4. Satisfaction with recycling behavior	6.65 (2.20)	1-10	-.153**	.284**	.603**	$\alpha = .95$		
5. Self-set goals	7.29 (1.95)	1-10	-.167**	.301**	.599**	.694**	$\alpha = .93$	
Behaviors								
6. Individual recycling behavior— self- reported	3.94 (1.00)	1-5	-.091**	.244**	.407**	.371**	.279**	$\alpha = .84$

\*\*All correlations have significant *p*-values lower to .01.

### Descriptive Statistics and Correlations (Hypotheses 1a, 1b, and 2)

Table 1 shows means, standard deviation, reliability, and correlation coefficients for each of the variables evaluated in the study. The table displays a negative correlation between intrinsic and extrinsic motivation. The correlations reveal that intrinsic motivation is positively correlated with self-regulatory mechanisms (self-efficacy, self-set goals, and environmental satisfaction) and environmental behaviors, whereas extrinsic motivation is correlated with environmental behaviors. Results show a high level of correlation among self-regulatory mechanisms (self-efficacy, self-set goals, and environmental satisfaction), and self-regulatory mechanisms are also related to environmental behaviors.

### *The Mediation Role of Intrinsic Motivation (Hypotheses 3)*

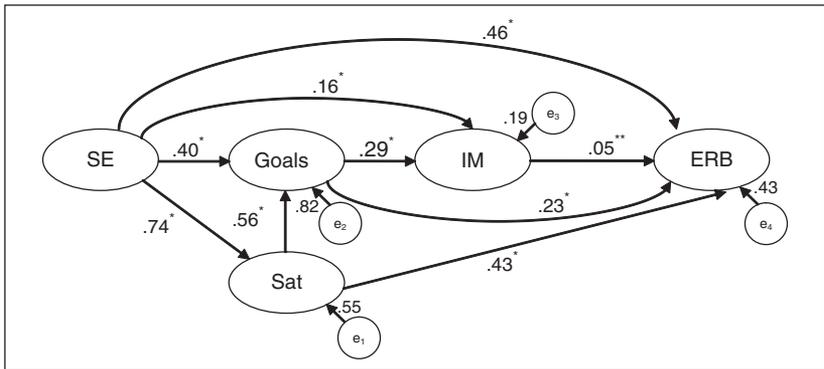
Regression analyses were performed to test the prediction that intrinsic motivation mediates the effects of self-efficacy on ERB (Baron & Kenny, 1986). A mediating variable (intrinsic motivation) transmits the effect of an independent variable (self-efficacy) on a dependent variable (ERB). A significant relation of self-efficacy to the ERB is shown in the first step ( $B = .62, p < .001$ ). Self-efficacy has a significant effect on intrinsic motivation in the second step ( $B = .38, p < .001$ ), whereas in the third step the mediational variable, intrinsic motivation, has a significant effect on ERB ( $B = .11, p < .001$ ), once self-efficacy and intrinsic motivation are inserted as predictors in an equation. Finally, in the fourth step, the coefficient ( $B = .57, p < .001$ ) relating self-efficacy to ERB in the regression model when self-efficacy and intrinsic motivation predict the ERB is lower than the coefficient relating self-efficacy to ERB ( $B = .62, p < .001$ ). The Sobel test coefficients show that the mediational effect of intrinsic motivation is significant on the relationship between self-efficacy and ERB ( $z = 4.001, p = .00006$ ). Our hypothesis was, therefore, corroborated.

### *Path Analysis to Explain Environmental Recycling Behavior*

Data are submitted to a *path analysis*. Figure 1 illustrates the path model in which self-efficacy for recycling determines individuals' level of satisfaction with recycling behavior and the goals they set for themselves. Subsequently, the level of self-efficacy and the level of goals set determine the intrinsic motivation that individuals manifest when carrying out the behavior. Finally, in-home recycling behavior is explained by all the variables included in the model—self-efficacy, satisfaction, level of goals, and intrinsic motivation— $R^2 = .45, F(4, 1,496) = 303.10, p < .001$ . A good fit was found for this model:  $\chi^2(df = 1, N = 1,501) = 1.15, p = .28$ ; Bentler Bonett fit index = 0.99; CFI = 0.99; RMSEA = 0.01; RI = .01 to .07. Extrinsic motivation has added no value to the model,  $R^2 = .45; F(4, 1,495) = 243.08, p < .001$ , and has no significant impact on environmental behavior ( $B = .03, ns$ ).

## **Discussion**

This article addresses two significant predictors of ERB—efficacy and motivation—which research has shown to directly and indirectly influence such behavior and which are also interrelated. Results show that individuals with a higher judgment of their capacity to recycle engage in more recycling behaviors, set more ambitious goals for themselves, feel more satisfied with



**Figure 1.** Path analysis with the variables SE, Goals, Sat, and IM as predictors of ERB

Note: SE = self-efficacy; Sat = satisfaction; IM = intrinsic motivation; ERB = environmental responsible behavior. The model explains 34% of total variance,  $R^2 = .43$ ,  $F(4, N = 1,489) = 279.81$ ,  $p < .001$ . The numbers represent the significant beta coefficients from the analyses performed.

\* $p < .01$ . \*\* $p < .05$ .

their behavior, and feel greater intrinsic motivation. One of the main contributions of this study is to emphasize the mediational role of intrinsic motivation in the relationship between self-efficacy and environmental behavior. Furthermore, the model proposed to explain environmental behavior highlights the importance of a combination of intrinsic motivation and self-efficacy as generators of other self-regulatory mechanisms that motivate behavior. In this case, we were working with a fairly broad sample population and the reliability ( $\alpha = .84$ ) of the ERB evaluated (in-home recycling behavior) was high.

These findings concur with the results presented by De Young (2000) in a review of research papers that consider the intrinsic satisfaction experienced when engaging in ERB as a source of motivation. On the basis of this review, De Young highlights the multidimensional nature of intrinsic satisfaction. Our article considers multiple components in the explanation of ERB by evaluating the perception of competences together with the satisfaction experienced and the intrinsic motivation for the behavior.

Our research supports the idea that a combination of self-efficacy and intrinsic motivation is needed to explain individuals' performance of ERBs. More important, satisfaction is associated with greater intrinsic motivation. From a social cognitive perspective, Bandura (1997) claims that creating adequate learning contexts and experiences generates interest and new sensations

in which self-efficacy and affective reactions play an important role. Consequently, Bandura (1997) defends the importance of knowing self-efficacy judgments to explain how people develop an implicit interest in tasks for which there was initially no intrinsic motivation, which occurs with the satisfaction experienced when recycling or saving water. Similarly, Locke and Latham (2002) argue that almost any activity can generate an implicit interest in citizens if the activity is a challenge and provides feedback vis-à-vis achievements and goal attainment.

As for the dual directionality of the relationships between self-regulatory mechanisms, Hartig et al. (2001) maintain that the affective state can be influenced by the environment and that perception of the environment can also be determined by the affective state of the individual evaluating it. Continuing with the importance of the affective state, Kals, Schumacher, and Montada (1999) believe that explanatory models of ERB cannot be based solely on cognitive components, and, consequently, they introduce a construct called "emotional affinity toward nature" based on past experiences as predictors of environmentally protective behaviors. Therefore, as shown in these results, the level of satisfaction experienced by citizens when engaging in proenvironmental behavior could be decisive in their choice of action, their behavioral intentions, their level of performance, and future motivation. However, the results found by Hartig et al. once again highlight the importance of other cognitive variables; these authors claim that individuals who perceive greater probabilities of influencing the environment engage in a higher number of ERBs. Therefore, it is logical to think that citizens who confer greater importance on their participation in waste separation have more feelings of self-efficacy. It seems obvious that this relationship is reciprocal and, hence, the individual might also think, "I feel capable of recycling and I think this behavior is important for environmental conservation."

Although it might be reasonable to believe that people who maintain a high level of personal interest maintain their behaviors until they satisfy that interest, Clary and Snyder (1999) demonstrated that individuals with self-oriented motives (self-esteem or personal development) tend to maintain their altruistic or voluntary behaviors far longer than people who focus more on community or social values. From a critical point of view, Judge et al.'s (2007) review highlights the fact that self-efficacy evaluated in these specific contexts can have other precursors or "distal variables" with a more stable and dispositional character. In this respect, certain authors have emphasized features or dispositions, such as altruism or empathy (Batson, 1998), and even genetic determinants or personality features (McCrae et al., 2000) among the

variables analyzed to explain prosocial behavior and, more specifically, pro-environmental behavior.

In terms of variable measurement for intrinsic and extrinsic motivation, this study does have certain limitations, as the measurement procedure only allows for establishing the correlation between both motivations without providing data about their reliability. Furthermore, it distinguishes between extrinsic and intrinsic motivation, establishing that the existence of a negative correlation between extrinsic and intrinsic motivation has been found in several studies (Pelletier et al., 1997; Sherman & Smith, 1984). The results obtained in this work follow the same line of the negative relation between both motivations.

In future research, a longitudinal study should enable us to address the effects of motivational processes as a self-determination continuum proposed by Ryan and Deci (2000; amotivation with non regulation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic regulation) on the development of ERBs over time. In the present study, intrinsic motivation has a direct influence on ERB. However, longitudinal and experimental studies (e.g., Burton, Lydon, D'Alessandro, & Koestner, 2006) would permit a review of how individuals acquire the motivation to carry them out and how such motivation affects ongoing behavioral choice and analytical strategies; strength of effort, persistence, and commitment; and the success or failure of subsequent performance. This research line would help to create patterns of ERBs across models of behavior, whether they introduce norms, values, rewards, and penalties, or generate positive experiences to feel satisfaction with the self or the community. These results have also pinpointed certain areas on which environmental policies should focus to generate more responsible environmental behaviors: to create judgments of capacities within individuals and to promote the belief that people can instigate environmental change in the future, which makes them feel satisfied with the recycling behavior developed.

In sum, the present research contributes a better understanding of the dynamics of motivational variables on ERBs. Intrinsic motivation plays a mediational role in the relationship between self-efficacy and proenvironmental behavior. A path analysis shows the impact of self-regulatory mechanisms and intrinsic motivation on the explanation of ERBs. These conclusions are reached with a different sample of citizens in which specific environmental behaviors are analyzed. These studies provide evidence for the independent and mediational role of motivational variables in the explanation of proenvironmental behavior. Once individuals generate a perception of ability

to develop a specific ERB, intrinsic motivation appears to play a mediational role in behavior.

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