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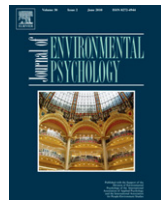
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Contents lists available at ScienceDirect

Journal of Environmental Psychology

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

The role of perceived government style in the facilitation of self-determined and non self-determined motivation for pro-environmental behavior

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ARTICLE INFO

Article history:

Available online 5 November 2009

Keywords:

Pro-environmental behavior
Self-determination theory
Motivation
Government environmental policy

ABSTRACT

Most North Americans are concerned about the environment and feel that responsibility for its protection lies primarily with government; however, no research to date has examined the influence of the government's approach toward environmental regulation on the motivation of individual citizens. According to self-determination theory, social contexts that support one's autonomy should facilitate self-determined motivation and social contexts that thwart autonomy should lead to non self-determined motivation and a sense of apathy or amotivation. In this study ($n = 283$), we examined the influence of perceptions of the government's approach toward environmental regulation on motivation toward the environment and frequency of self-reported pro-environmental behavior (PEB). Using structural equation modeling, we tested the hypothesis that frequency of PEB is predicted by motivation toward the environment and that motivation is predicted by the extent to which individuals perceive the government to be autonomy-supportive versus controlling in the implementation of environmental policies. The analysis revealed that perception of government autonomy-support contributed positively to autonomous motivation and negatively to amotivation, while perception of government control was positively related to both controlled motivation and amotivation. As predicted, autonomous motivation was positively, and amotivation was negatively, associated with frequency of PEB.

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North Americans are increasingly aware of the precarious state of our environment. In a recent survey (Environics, 2005a), the bulk of Canadian respondents reported being "very concerned" with environmental issues such as the quality of the air (60.2%), the quality of the water (62.4%), climate change (43.2%), and the manufacture, use and disposal of toxic chemicals (64.1%). In addition, most Canadians (62.1%) "strongly agree" that we have a responsibility to do everything possible to address environmental issues that will affect future generations such as climate change (Ekos, 2003). Though some Canadians (28.7%) recognize that they, as individuals, are primarily responsible for the protection of the environment, even more (43.1%) believe that either the provincial or federal government is responsible for implementing environmental policies for the benefit of the population in general (Environics, 2005b).

Although citizens believe government has an important role in issues of environmental protection, little attention has been paid to

how the environmental behaviors of citizens are impacted by their view of the government's approach toward environmental policy. This relationship is an important 1 as government environmental programs and policies are universally applied and, therefore, exert a systemic influence on each and every citizen. Besides providing the infrastructure for the facilitation of large-scale pro-environmental behaviors (PEB), such as curbside recycling programs, government has developed and implemented several programs and policies aimed at motivating individuals to engage in PEB (e.g., advertisements, transit pass tax credits, rebates for programmable thermostats, discounts on insurance of hybrid vehicles, etc.). Yet, to date, no research has studied the effects of the government's approach toward the introduction and implementation of such programs and policies on the motivation for PEB of individual citizens. Consequently, there is a need to examine if, and how, perceptions of government environmental regulation affect the motivation for, and performance of, PEB at the level of the individual.

Self-determination theory (Deci & Ryan, 2000) was chosen as a framework for two main reasons: it has been shown to be significantly and reliably associated with PEB, and it provides specific predictions about how social factors influence motivation.

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1. Self-determination theory

According to self-determination theory (SDT; Ryan & Deci, 2000), human motives can be disseminated into three broad categories characterized by the amount of self-determination associated with the target behavior. *Intrinsic motivation* is the most self-determined form of motivation. It refers to behavioral regulation exerted for the sheer pleasure and satisfaction derived from the activity itself, in other words, for purely non-instrumental reasons. *Extrinsic motivation* describes behaviors that are performed as a means to an end; the behavior is valued to the extent that it has the ability to yield some desired outcome. Deci and Ryan (2000) distinguish between four types of behavioral regulation resulting from extrinsic motivation; from most to least self-determined these types are integration, identification, introjection, and external regulation. The most self-determined types of extrinsic motivation are identification and integration. Identification refers to behavioral regulation that stems from the inherent value the person ascribes to the activity; that is, the person identifies with the activity because it allows him or her to reach his or her goals. Integration refers to behavioral regulation that arises because the activity has become part of the person's self-concept, in other words, the person performs the behavior not only because it is important but also because it serves as an expression of the self and is coherent with other personal goals and values. Together, intrinsic motivation, integrated, and identified regulation constitute the autonomous motivation construct because the impetus to engage in the activity is the result of personal choice. The least self-determined types of extrinsic motivation are external regulation and introjection. External regulation refers to activities performed because of perceived external pressure applied by the social context such as when one is offered an incentive (or a disincentive) or when one feels his or her place within a social group is jeopardized. Introjection refers to behavioral regulation stemming from the internalization of external pressure which leads to feelings of obligation to do the behavior and feelings of guilt and shame when one fails to do the behavior. External regulation and introjection together are referred to as controlled motivation because the motives driving the behavior are perceived to be external to the self. Finally, *amotivation* refers to an absence of motivation; specifically, a lack of intention to act and an absence of behavioral regulation. Amotivation results from a lack of self-determination that arises because the outcomes or values attached to the behavior are not appreciated, the necessary knowledge or skills to execute the behavior are lacking, or the behavior is not believed to lead to the desired outcome.

A considerable amount of research in the last 20 years has examined the implications of being intrinsically or extrinsically motivated for an activity. More specifically, research guided by SDT (Deci & Ryan, 1985, 2000; Ryan & Deci, 2000, 2002 for reviews), has shown that the extent to which individuals' behaviors are intrinsically motivated and autonomous (i.e., fully volitional, freely pursued and wholly endorsed by the self) as opposed to extrinsically motivated and controlled (i.e., pressured and directed by external or internal forces leaving people feeling like they have no choice), has important consequences for the quality of their experience, and the maintenance of their behavior. Specifically, compared to controlled motivation and amotivation, autonomous motivation has been reliably linked with increased task persistence, well-being, and psychological health (Deci & Ryan, 2008).

Many researchers have shown that SDT is a useful framework to explain PEB (see Pelletier, 2002). For example, Pelletier, Tuson, Green-Demers, Noels, and Beaton (1998) found that a higher level of self-determined (autonomous) motivation when engaging in PEB was associated with a higher frequency of PEB. Controlled

motivation was mostly unrelated to frequency of PEB; no matter how much controlled motivation a person exhibited, he or she displayed the same amount of PEB. And, at the other end of the self-determination continuum, high levels of amotivation were found to be associated with a low frequency of PEB. Of the six types of behavioral regulation proposed by SDT, identified regulation for PEB was the most strongly endorsed by participants. In another study, Green-Demers, Pelletier, and Menard (1997) not only found that high levels of self-determination were associated with more frequent PEB but also that, as behaviors became increasingly difficult, the relationship between frequency of PEB and self-determination strengthened. In other words, level of self-determination became a better predictor of frequency as environmental behaviors got more difficult. It seems that the initiation, maintenance, and intensification of PEB may be a function of increased self-determination.

Additional support for the positive role of self-determined motivation for environmentally responsible behavior change was demonstrated by Osbaldiston and Sheldon (2003). In their study, individuals who endorsed self-determined reasons for engaging in environmentally responsible behavior exhibited self-sustained positive environmental behavior change compared to individuals who endorsed non self-determined reasons for the pursuit of environmental goals. In other words, individuals with self-determined motivations reported being more successful in the pursuit of self-prescribed environmental goals in the 7 days following the laboratory session and, in turn, reported more of an inclination to maintain the behaviors outside of the confines of the study. These authors concluded that "self-determined (or internalized) environmental motivation may indeed be the kind of 'high-quality' motivation that is necessary to minimize environmental issues" (Osbaldiston & Sheldon, 2003, p. 356).

In sum, the results of these studies clearly support the idea that self-determined or autonomous motivation is a key factor for the promotion of PEB. Therefore, it is important to find effective ways to encourage self-determined motivation for PEB.

2. Promoting autonomous and controlled motivation for PEB

Though many individuals consider PEB important they likely do not find behaviors such as sorting waste, buying eco-friendly products, and convincing others to act environmentally, interesting or enjoyable in and of themselves. Behaviors that are not intrinsically motivated will often initially manifest themselves as a result of external pressures but, according to SDT (Deci & Ryan, 2000), have the potential to become internalized. This is based on the assumption that individuals have an innate tendency to adopt increasingly more self-determined motives for a behavior. Motives that have been successfully internalized are adopted as one's own and integrated within one's self-concept. According to SDT, contextual factors, such as parents, peers, or educators, can have the effect of either stalling or assisting the inherent integrative tendency of individuals toward internalization depending on whether their interpersonal or communicative style supports or thwarts the basic psychological needs for autonomy, competence, and relatedness (or care).

Indeed, research has demonstrated the influence of contextual factors on motivation in many domains. For example, students who felt that their teacher supported their autonomy, that is used a communicative style that was informative and that conveyed choice, were more likely to be intrinsically motivated to learn compared to students who felt that their teacher was controlling, that is used a communicative style that was authoritarian and conveyed an obligation to learn (Noels, Clement, & Pelletier, 1999). Students of autonomy-supportive teachers also put more effort into the learning process and had stronger intentions to pursue their

studies. Similar results have been found in other domains, for example, autonomy-supportive physicians were found to promote autonomous motivation for health-related behaviors in their patients (Williams & Deci, 2001; Williams, McGregor, King, Nelson, & Glasgow, 2005). The mediational role of autonomous motivation has been supported in many studies researching the link between autonomy-support and desirable psychological and behavioral outcomes (Deci & Ryan, 2008). However, the literature also shows that, over and beyond its positive impact on autonomous motivation, autonomy-support contributes to lower levels of amotivation; an equally desirable outcome. For example, Pelletier, Fortier, Val-lerand, and Brière (2001) demonstrated that autonomy-supportive coaches significantly enhanced the autonomous motivation and diminished the amotivation of their swimmers. Consequently, supported swimmers were found to be more persistent in their sport as measured 22 months following the initial assessment. Together these findings show that, regardless of the specific social context, feeling that one's need for autonomy is met by supportive others has positive motivational, behavioral, and psychological outcomes for the self.

There has been less research on the effect of autonomy-support on controlled motivation, the motivation construct that combines external and introjection regulation. However, Chirkov and Ryan (2001) found that relative autonomy-support (a composite variable that subtracts perception of control from perception of autonomy-support) from a parent or teacher predicted lower levels of externally regulated academic motivation but did not predict introjected academic motivation. On the other hand, Pelletier et al. (2001) found that both an autonomy-supportive and a controlling coaching style contributed positively to introjected sport motivation in swimmers while only a controlling coaching style explained the presence of external regulation. Additionally, in a study of parenting influences on the prosocial behavior of young adults (Roth, 2008), an autonomy-supportive approach to parenting was found to be correlated with autonomous motivation and other-directed prosocial behavior but not with introjection (external regulation was not measured). In fact, only a positive conditional regard parenting style (a controlling parenting style whereby affection is contingent on behavior) predicted introjection. Finally, Smith, Ntoumanis, and Duda (2007), basing themselves on published work, simply did not hypothesize the existence of such a link. Though autonomy-support as well as autonomous and controlled motives for goal pursuit were included in their model, only the autonomy-support to autonomous motives path was tested; the autonomy-support to controlled motives path was left out.

On one hand, it is generally agreed upon in the literature that felt control in the form of offered rewards, imposed deadlines, and, or, exerted social pressure, tends to undermine intrinsic motivation for an activity (see Deci & Ryan, 1987 for a review). The impacts of control on integrated and identified regulation are less well documented. In fact, to our knowledge no studies have found evidence that a controlling style has an undermining effect on these forms of motivation or the broader construct of autonomous motivation which also includes intrinsic motivation. On the other hand, a controlling style has been reliably linked with controlled motivation and amotivation, when the controlling style is also perceived as thwarting the basic needs for competence and relatedness, (Deci & Ryan, 2000). In their study of coaches and swimmers, Pelletier et al. (2001) demonstrated that a controlling coaching style was positively related to introjection and amotivation but especially external regulation. A controlling coaching style was not predictive of either identified regulation or intrinsic motivation; integrated regulation was not measured. Though intrinsic motivation has been shown to decrease in controlling contexts, this does not appear to be the case for identified and integrated regulation. A controlling

context is likely to have little to no effect on this construct because the combination of these latter two forms of regulation is the major constituent of autonomous motivation, just like autonomy-support is likely to have little to no effect on controlled motivation.

In the environmental domain, a laboratory study conducted by Osbaldiston and Sheldon (2003) showed that the perceived supportiveness of the experimenter contributed positively to, and explained 14% of the variance in, "internalized motivation" for the pursuit and maintenance of self-prescribed environmental goals up to 7 days following the goal-setting session. In another study by Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004), the experimental context was manipulated to be either autonomy-supportive or controlling when presenting either an intrinsic goal of contributing to the community or an extrinsic goal of attaining monetary benefit for engaging in learning about recycling and ecology. The results showed that students in an autonomy-supportive context exhibited more autonomous motivation for the learning task, deeper processing of the learning materials, greater persistence at the task, and better performance on a subsequent comprehension test compared to students exposed to a controlling experimental context. Clearly, contextual factors have implications for the quality of motivation for pro-environmental pursuits, however, little, if any, research has looked at broader contextual factors involved in motivation for PEB.

The above review highlights the emphasis in the literature on proximal contextual factors affecting motivation, however, due to the pervasiveness of environmental issues, contextual factors for environmental motivation extend beyond the scope of interpersonal relationships. One particularly relevant factor for PEB is government, given that it is generally responsible for implementing and enforcing environmental regulations and programs aimed at encouraging PEB at a community level through to a national level. It is true that, by definition, environmental laws and policies are a form of control. However, as SDT claims (Deci & Ryan, 1987), it is the perception (psychological meaning ascribed to) of contextual factors, not the factors themselves, that determine motivation. In other words, contextual factors do not exert a direct influence on motivation. Rather, they indirectly influence motivation and the regulation of behavior to the extent that the behavior perceives them to be autonomy-supportive or controlling. Perception is vulnerable to individual differences therefore, it is reasonable to expect that different individuals could interpret the same social situation differently depending on their unique dispositional tendencies. One individual might interpret a particular environmental policy such as transit pass tax credits or discounts on insurance of hybrid vehicles as coercive, while the next individual might interpret the same policy merely as a suggestion and feel that he or she is free to decide whether or not to engage in the behavior.

Despite the seemingly important role that citizens attribute to government for issues of environmental protection, to our knowledge, no research has examined the effects of the government's systemic regulatory influence on the environmental behaviors of its citizens. Can the government impact individuals' motivation for the environment just as more proximal sources have been shown to influence motivations for other domains? The primary goal of this study is to determine whether perception of government style (i.e., autonomy-supportive versus controlling) has an impact on motivation for PEB. More specifically, is the perception of an autonomy-supportive government associated with more autonomous motivation, and the perception of a controlling government associated with more controlled motivation and amotivation?

In this study, we set out to examine the role of perception of government autonomy-support and control on motivation toward the environment. Autonomous motivation has been associated

with effective and sustained environmental goal pursuit (Osbaldiston & Sheldon, 2003; Vansteenkiste et al., 2004) as well as a higher frequency of PEB (Pelletier et al., 1998). Thus, a specific objective of this study was to examine how perceived government style for the implementation of environmental regulation might predict autonomous motivation. The hypothesized model is presented in Fig. 1. We hypothesized that motivation toward the environment would predictably affect frequency of PEB. Specifically, we expected that autonomous motivation would be positively associated with more frequent PEB, controlled motivation would not significantly contribute to the prediction of frequency of PEB, and amotivation would be negatively associated with frequency of PEB. As per our review of previous research examining the influence of contextual factors on motivation, we hypothesized that perceptions of government style would affect motivation for the environment. Specifically, we believed that perceptions of government autonomy-support would foster higher levels of autonomous motivation and lower levels of amotivation. A path between perceived government autonomy-support and controlled motivation was not predicted because this relationship has received little empirical support and both introjection and external regulation seem largely unrelated to perceptions of autonomy-support. In contrast, we expected perceived government control to be positively associated with controlled motivation and amotivation. Due to the lack of evidence supporting a link between government control and autonomous motivation and the finding of Pelletier et al. (1998) that self-determined or autonomous motivation for PEB is largely driven by identified regulation, not intrinsic motivation, the link between perceived government control and autonomous motivation was not included in the model.

3. Method

3.1. Participants

A sample of 283 full-time undergraduate students (228 women and 55 men) enrolled in an introductory psychology course at the University of Ottawa in Ontario, Canada participated in the study. The mean age was 18 years, with a range of 17 and 23 years.

3.2. Procedure

Students were invited to participate in the study in exchange for course credit. They were asked to fill out an online questionnaire at

their convenience. The questionnaire assessed participants' self-reported environmental behaviors, perceptions of government style for the promotion of environmental action, as well as their motivation toward the environment. All participants were assured that their participation was confidential and voluntary, and that their names would not be associated with the data.

3.3. Measures

3.3.1. Government style questionnaire (GSQ; Green-Demers, Blanchard, Pelletier, & Béland, 1994)

This scale consists of 7 items distributed into two subscales; perceived government autonomy-support and perceived government control. The four items that constitute the government control subscale of the GSQ gauge the extent to which individuals perceive that the government imposes itself or pressures citizens into making environmental decisions (e.g., "I feel that the government imposes its environmental strategies on us"). For the purposes of structural equation modeling, each item from this subscale was used as an indicator of the government control construct. The other three items constitute the perception of government autonomy-support subscale. This subscale measures the extent to which individuals perceive that the government gives them choice when making environmental decisions (e.g., "the government gives me the freedom to make my own decisions in regards to the environment"). Each of the three items was used as an indicator of government autonomy-support for structural equation modeling. Both subscales demonstrated satisfactory internal consistency (Table 1).

3.3.2. Motivation toward the environment scale (MTES; Pelletier et al., 1998)

This scale includes 24 items that answer the question "Why are you doing things for the environment?" The items form six subscales of four items that reflect the six types of motivation identified by Deci and Ryan (2000). Ranging from most to least autonomous, these constructs are: intrinsic motivation (e.g., "for the pleasure I get from contributing to the environment"), integrated motivation (e.g., "because taking care of the environment is an integral part of my life"), identified motivation (e.g., "because it is a reasonable thing to do to help the environment"), introjected motivation (e.g., "because I would feel guilty if I didn't"), externally regulated motivation (e.g., "for the recognition I get from others"), and amotivation (e.g., "I don't really know; I can't see what I'm

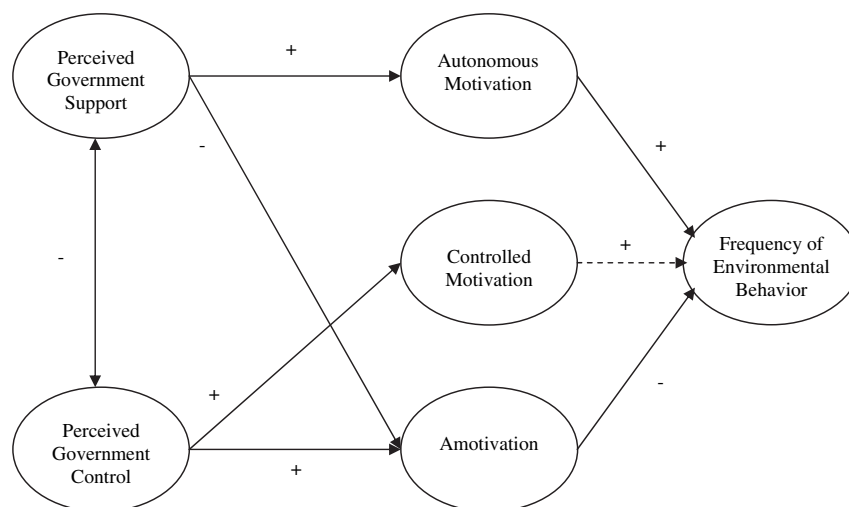


Fig. 1. Hypothesized motivational model of pro-environmental behavior.

Table 1
Means, standard deviations, and intercorrelations of the model variables.

	Mean (SD)	1.	2.	3.	4.	5.	6.
1. Perceived Government Control	2.95 (1.15)	(.80)	-.20**	-.05	.30**	.36**	-.08
2. Perceived Government Support	4.66 (1.08)		(.62)	.13*	-.05	-.21**	.01
3. Autonomous Motivation	4.92 (.98)			(.92)	.39**	-.43**	.49**
4. Controlled Motivation	3.47 (1.03)				(.83)	.28**	.21**
5. Amotivation	1.96 (1.06)					(.89)	-.29**
6. Frequency of PEB	4.05 (.83)						(.92)

Note. Values of internal consistency are displayed in brackets (α).

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

getting out of it"). Participants were asked to indicate the extent to which each item corresponded to their reasons for engaging in PEB on a 7-point scale ranging from 1 (*Does not correspond at all*) to 7 (*Corresponds exactly*). The reliability and validity of the MTES has been demonstrated by exploratory and confirmatory factor analyses in the past (Pelletier et al., 1998).

For this study, the different types of motivation were combined into three motivation constructs; autonomous motivation, controlled motivation, and amotivation as per previous SDT research (Ratelle, Guay, Vallerand, Larose, & Senécal, 2007). Autonomous motivation refers to those types of intrinsic and extrinsic motivation (intrinsic, integrated, and identified) that are based on the activity's value, importance, and relevance to the person's core values and interests. This construct was measured using 12 items. Controlled motivation (introjection and externally regulated motivation) reflects external reasons for pursuing an activity such as peer or regulatory pressure, as well as self-imposed feelings of culpability and was measured by way of 8 distinct items. Amotivation refers to an absence of motivation. The construct was measured using 4 items. All three motivation constructs demonstrated adequate internal consistency (Table 1).

For the purpose of structural equation modeling, four autonomous motivation indicators were computed by randomly matching the autonomous motivation items, and four controlled indicators were computed by randomly matching the controlled motivation items. Cronbach's alpha for the autonomous motivation indicators and the controlled motivation indicators were .92 and .90 respectively. Each amotivation item served as an indicator for the amotivation construct. Cronbach's alpha for the four amotivation items was .89.

3.3.3. Frequency of pro-environmental behaviors (Pelletier et al., 1998)

This scale contains items that answer the question "How often do you do the following activities?" Four broad categories of PEB were retained for the purpose of this study, including recycling (7 items; e.g., "recycle newspapers"), energy conservation (5 items; e.g., "turn off lights when not home"), biopurchasing (6 items; e.g., "buy biodegradable products"), and education (4 items; e.g., "read books or magazines on the environment"). The items were rated on a 7-point scale ranging from 1 (*Not very often*) to 7 (*Very often*). Participants were asked to complete the questionnaire twice; once to reflect their PEB at their permanent home and once to reflect their PEB at their on-campus residence. Four PEB indicators were computed for the purposes of structural equation modeling. The 44 PEB items were randomly combined into four indicators of 11 items for the purposes of structural equation modeling. The four PEB indicators showed good internal consistency ($\alpha = .93$) as did the 44 frequency of PEB items (Table 1).

4. Results

Tests of the hypothesized model were conducted and will be presented in three stages. First, preliminary analyses were conducted in order to screen for outliers and to test for adherence to the basic assumptions of the multivariate analyses to be conducted. Second, the measurement model was examined using confirmatory factor analyses. Third, the hypothesized structure between the latent constructs was tested.

4.1. Preliminary analyses

The data was scanned for univariate outliers; a total of 16 outlier scores were corrected (Tabachnick & Fidell, 2006). In addition, three (2 female and 1 male) participants were found to be multivariate outliers and removed from the analysis (McClelland, 2000). Descriptive statistics (Table 1) revealed that skewness and kurtosis were within acceptable ranges (Muthen & Kaplan, 1985) and correlations revealed no major concerns of multicollinearity. From a multivariate perspective, the distribution of standardized residuals appeared normal, no departures from linearity were encountered, nor was there any evidence of homoscedasticity.

In summary, means and standard deviations (Table 1) indicate that autonomous motives for PEB were endorsed more strongly than controlled motives among our participants, and both autonomous and controlled motives overshadowed amotivation toward environmental action ($F_{(1,52, N=280)} = 613.59, p < .001$; Greenhouse-Geisser correction applied) Overall, the government was perceived as being more autonomy-supportive than controlling in encouraging environmentally responsible decisions and actions ($t_{(279)} = 16.49, p < .001$). Finally, the correlations reflected the expected relationships; perceived government control was negatively related to perceived government autonomy-support, autonomous motivation was negatively related to amotivation, controlled motivation was correlated to both autonomous motivation and amotivation, and frequency of PEB was positively associated with autonomous and controlled motivation but negatively associated with amotivation.

4.2. Structural equation modeling

Structural equation modeling was conducted with version 6.0 of the AMOS statistical program. Maximum likelihood estimation was used to estimate all models. Several different indicators of overall model fit are reported in this paper: (a) the chi-square likelihood ratio (χ^2), (b) the root mean square error of approximation (RMSEA) and its confidence interval and, (c) the comparative fit index (CFI). The χ^2 value is a statistical measure of overall fit that measures the closeness of fit between the sample covariance matrix and the fitted covariance matrix. It is therefore desirable to obtain a value that is not statistically significant, suggesting that the sample covariance matrix does not differ from the predicted one. However, it is well known that the chi-square is sensitive to sample size, and given that SEM is based in large-sample theory, results typically show a significant difference. For this reason, the chi-square likelihood ratio is more useful in practice when regarded as a measure of fit than as a test statistic (Jöreskog & Sörbom, 1993), and it has become customary to evaluate a model on practical indices of fit. The RMSEA is a measure of absolute model fit, which reflects the size of the residuals that result when using the model to predict the data, adjusting for model complexity. Smaller values thus indicate better fit: an RMSEA value between .05 and .08 represents "reasonably close fit", while an RMSEA above .10 represents an unacceptable model (Brown & Cudeck, 1989). Finally, the CFI is a practical measure of relative fit based on the chi-square statistic.

The value indicates the improved fit of the proposed model's chi-square as compared to that of a "null" model's, which assumes that sampling error alone explains the covariation among observed measures. CFI values range between 0 and 1. Values above .90 are considered indicative of acceptable fit to the data (Bentler, 1992).

4.2.1. GSQ confirmatory factor analysis

Table 2 shows that each item of the GSQ demonstrated adequate variability and had a relatively normal distribution. A confirmatory factor analysis (CFA) was performed to assess the structure of the GSQ. The results show that the proposed two-factor structure is an acceptable fit to the data: ($\chi^2_{(13, N=280)} = 34.51, p < .01$; RMSEA = .08; RMSEA confidence interval = .05 to .11; CFI = .95). Item factor loadings are reported in Table 2.

4.2.2. Overall measurement model

The overall measurement model was assessed using confirmatory factor analysis (CFA). Each indicator was hypothesized to display a significant and substantial loading on its target factor, and zero loading on the other factors. Second, the error variance associated with each indicator was hypothesized to be small, yet significant, and its uniqueness component to be uncorrelated with that of any other indicator. For identification purposes, the loadings between the first indicator of each latent variable and its target factor were fixed to 1.0. No constraints were imposed on the structural parameters, allowing the latent factors to correlate freely during assessment of the measurement model. The results supported the hypotheses: ($\chi^2_{(215, N=280)} = 330.54, p < .01$; RMSEA = .04; confidence interval of RMSEA = .03 to .05; CFI = .97). All estimated parameters were within an acceptable range. Factor loadings are reported in Table 3.

4.2.3. Motivational model for PEB

Results revealed that the hypothesized model displayed an acceptable fit to the data (see Fig. 2). The Lagrange Multiplier test indicated that correlating some errors could result in a decrease of the chi-square. However, given that the fit was already satisfactory, no post hoc model fitting was conducted. Factor loadings for the latent constructs are shown in Table 3.

As hypothesized, autonomous motivation was directly and positively effected by government autonomy-support. Controlled motivation was directly and positively effected by government control, while amotivation was directly effected in a positive way by government control and in a negative way by government support. Perceived government autonomy-support accounted for 3% of autonomous motivation variance, perceived government control accounted for 13% of controlled motivation variance, and the

Table 3
Factor loadings of latent constructs.

Latent Construct	Item/Parcel			
	1	2	3	4
Perceived Government Control	.65	.72	.83	.63
Perceived Government Autonomy-Support	.47	.64	.68	–
Autonomous Motivation	.92	.85	.82	.89
Controlled Motivation	.78	.86	.82	.85
Amotivation	.82	.87	.76	.82
Frequency of Pro-Environmental Behaviors	.91	.88	.79	.89

contribution of both perceived government styles accounted for 23% of amotivation variance. Finally, frequency of PEB was directly effected by autonomous motivation and amotivation; the effect of autonomous motivation was positive while that of amotivation was negative. Controlled motivation had no significant effect on frequency of PEB.

Although perceptions of government autonomy-support and control were not hypothesized to have direct effects on frequency of PEB, their total indirect effects through motivation were evaluated using bootstrap approximations obtained by constructing two-sided bias-corrected confidence intervals (Hayes, 2009). Perceived government autonomy-support did not have an indirect effect on frequency of PEB when autonomous motivation and amotivation were included as intervening variables (standardized indirect effect coefficient = .10, confidence interval –.02 to .37; $p = .11$). Likewise, perceived government control did not exert an indirect effect on frequency of PEB via controlled motivation and amotivation (standardized indirect effect coefficient = –.04, confidence interval –.11 to .03; $p = .25$). The sum of the direct and indirect effects due to perceived government style and motivation toward the environment explained 21% of the variance in self-reported frequency of PEB.

5. Discussion

The goal of this study was to test a motivational model of PEB that used perception of government style for the implementation of environmental programs and policies as a predictor of motivation for PEB. Based on previous research (Pelletier et al., 1998), it was hypothesized that motivation toward the environment would be linked to frequency of PEB. As expected, autonomous motivation predicted a higher frequency of PEB, controlled motivation did not predict frequency of PEB, and amotivation predicted a lower frequency of PEB. Autonomous motivation and amotivation accounted for about one-fifth of the variance in frequency of PEB.

Table 2
Descriptive statistics and CFA results for the GSQ scale items.

Item	Mean	Standard Deviation	Skewness	Kurtosis	Factor Loading
Perceived Government Control					
1. I think the government puts a lot of pressure on people to adopt environmentally-conscious behaviors.	3.01	1.49	.44	–.22	.66
2. I feel the government imposes its environmental strategies on us.	3.20	1.38	.07	–.67	.74
3. I feel that the government is trying to force me to adopt environmental behaviors.	2.71	1.45	.45	–.54	.82
4. I feel the government wants to make me feel guilty when I do nothing for the environment.	2.88	1.56	.53	–.42	.61
Perceived Government Autonomy-Support					
5. I feel I have choice to use the strategies provided by the government in order to help the environment.	4.68	1.47	–.19	–.20	.44
6. The government gives me the freedom to make my own decisions in regards to the environment.	4.47	1.45	–.15	–.18	.67
7. I feel I have the choice to participate to the environmental programs established by the government.	4.85	1.46	.08	.37	.68

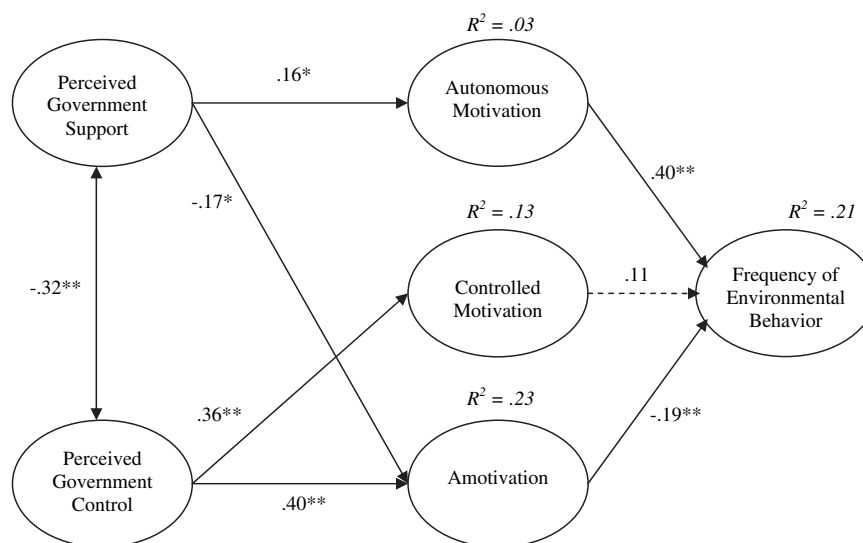


Fig. 2. Tested motivational model of pro-environmental behavior ($\chi^2(222, N=280) = 517.80, p < .01$; CFI = .93; RMSEA = .07; RMSEA confidence interval = .06, .08) Note. Standardized coefficients are displayed. * $p < .05$, ** $p < .01$.

These findings lend credence to the important role of self-determined motivation for the promotion of PEB at an individual level.

Our hypotheses about the role of government support for the facilitation of self-determined PEB were also confirmed. Perception of government autonomy-support contributed to higher levels of self-determination, which was evidenced by a direct positive effect on autonomous motivation and a direct negative effect on amotivation. Perception of government control, on the other hand, did not appear to support participants' need for self-determination. It had a strong direct positive effect on both controlled motivation and amotivation. In sum, while government was generally perceived as more autonomy-supportive than controlling, the perception of government as controlling seems to be the more dominant predictor of motivation for PEB. Unfortunately, due to the structure of our model, which assesses each form of motivation individually, this cannot be confirmed statistically. Reasons that might explain this apparent pattern of influence are discussed next.

5.1. Implications and future research

Overall, the perception of government as controlling seems to play a more influential (and detrimental) role in the prediction of motivation for PEB than does perceived autonomy-support. More specifically, the perception of government as controlling seems to be associated more systematically with a non self-determined motivation for PEB. This finding is consistent with past research of psychological needs. Sheldon and Filak (2008) found that "it may be more important to avoid thwarting [individuals'] needs rather than to make a particular attempt to meet them" (p. 275). Their results showed that, compared to a neutral control group, study participants that had any number of their three basic psychological needs thwarted by an experimental manipulation generally experienced less need satisfaction, less self-determined motivation, a more negative mood, and poorer task performance. In contrast, participants in the needs support condition were not significantly different from the control group on most psychological and behavioral outcomes. This clearly has practical implications. If government wishes to encourage a more sustained motivation for PEB among its citizens, it will likely need to put more emphasis on supporting their autonomy and, more importantly, on appearing less controlling.

Though perception of government style does seem to affect environmental motivation, one must keep in mind that the proportion of explained variance for the three types of motivation assessed in this study was small; especially for autonomous motivation, the only predictor of frequent PEB. This suggests that, in terms of environmental motivation, government may actually be a contextual factor of modest influence and that there are likely other, perhaps more influential, contextual and dispositional factors affecting environmental motivation. Presumably, one could expect that certain person factors like existing environmental motivation as well as more proximal contextual factors like parents, educators, and peers (Deci & Ryan, 2000) might contribute over and beyond, and even possibly interact with, the influence of perceived government style on environmental motivation. In other words, not only is environmental motivation likely influenced by both proximal and distal sources of social influence concurrently but, it is also likely that a person's existing motivation might color their perceptions of whether these contextual factors support versus thwart their basic psychological needs. Clearly, these hypotheses regarding the interaction of proximal and distal contextual factors warrant further study.

Another reason that may explain the small proportion of explained autonomous motivation variance concerns the basic psychological needs for competence and relatedness (Deci & Ryan, 2000). Some research has shown that the influence of autonomy-support on autonomous motivation and amotivation is partially mediated by perceived competence (Ommundsen & Kvalø, 2007). Therefore, future studies may benefit from measuring citizens' perceived competence for PEB as well as their perceptions of government support for environmental competence. For example, one could measure whether or not citizens feel that government provides sufficient information on how to initiate and maintain PEB (Pelletier & Sharp, 2008) or positive feedback in response to their environmental efforts (Deci & Ryan, 1987). Deci and Ryan (2000) also suggested that for an individual to internalize the values and regulations of his or her social group, his or her need for relatedness must be met. Otherwise the process of internalization risks getting stalled at introjected behavioral regulation, a controlled form of motivation. On the surface, it would seem that government provides little support of the need for relatedness; however, a closer examination of the satisfaction of this need by government is justified.

Finally, our results merely provide a snapshot of the influence of perceived government style on environmental motivation and self-determined PEB. Because it is the perception of government (and other contextual factors) as more or less autonomy-supportive or controlling, rather than the actual actions taken by it, that influences a person's motivation (Deci & Ryan, 1987), then one would expect that these perceptions might vary with time and from one situation to another. For example, one might expect perceptual fluctuations across time as a person grows, across governments as they evolve and adopt new leaders, as well as between governments that abide by different ideologies. Hence, longitudinal and multi-national research could significantly contribute to the environmental literature in several ways. First, longitudinal research could uncover the role of government for the internalization (or diminution) of environmental motivation over the course of months or years. Second, the examination of changes in, and adjustment to, new and existing environmental policies may reveal fluctuations in the public's perception of government style over time and across nations, which could also be associated with corresponding variations in environmental motivation. In addition to changes associated with fluctuations in environmental policy attributable to a single government, longitudinal research could help determine how a transition from one government to another affects environmental motivation. For instance, multi-national research could establish how governments from foreign countries affect the environmental motivation of domestic citizens.

Finally, our measure of perception of government style for the implementation of environmental programs and policies, made no distinction between municipal, provincial, and federal levels of government. For the purposes of this study, we felt that such a distinction was not necessary because our objective was to generally assess whether or not perception of government style with regards to environmental regulation might affect the motivation toward the environment of citizens. The next logical step would involve testing the relation between perceptions of government style and environmental motivation at each different level of government (municipal, provincial (or state), and federal). This would lend credence to the notion that it is the perception of the government's style as either supporting or thwarting the basic need for autonomy that influences citizens' environmental motivation, not the environmental policies themselves. Some evidence of differences in perception as a function of level of government stems from research on environmental health risk information. In their study, Séguin, Pelletier, and Hunsley (1999) found that citizens report being more likely to seek out, and having more confidence in, environmental health risk information from a government agency (e.g., Environment Canada) than similar information from regional government and industry (e.g., municipal and provincial governments, private industry). Further research is needed to uncover whether similar differences exist for perception of government style for the implementation of environmental programs and policies.

6. Conclusion

Though government is a distal source of influence on motivation toward the environment, it still plays a significant role in the environmental engagement of its citizens. Specifically, the perception of its style as controlling seems to undermine environmental motivation, which in turn affects frequency of PEB. This suggests that, in the future, government needs to adopt a less controlling approach to environmental regulation if it is to play a positive role in the facilitation of self-determined PEB. This calls for more research aimed at identifying internal and contextual factors that may assist the government with the facilitation of

self-determined PEB. Finally, due to the variable nature of government and its policies, longitudinal and multi-national research is needed to examine the motivational fluctuations associated with differences between or changes in government and, or, its policies.

Acknowledgements

We thank all of the members of the Human Motivation Research Laboratory at the University of Ottawa who have contributed to these ideas and research, and to Nicole Aitken for her specific help with this article.

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