

SUSTAINABLE BEHAVIOR: Propositions for Persuasive Communications

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Abstract: This paper develops a set of propositions that should orient the development of argument and the execution of communication campaign aiming to foster sustainable behaviors. First, an integrative model for sustainable behavior is adapted from existing literature, describing a psychosocial model embracing values, cognition, social and moral norms and attitude. Against this background theories from cognitive (prospect theory and framing effects) and social psychology (social dilemmas and social identity) support the recommendations for adequate framing for persuasive communication. One specific marketing campaign, from a Brazilian producer of ethanol, was subjected to a Peircean semiotic analysis revealing opportunities to improve current marketing practices based on well establish behavioral theories.

Key words: sustainable behavior, Value Based Norm, Moral Activation Norm, Theory of Planned Behavior, framing effects, Prospect Theory, Identity Theory, social dilemmas, Semiotics Analysis.

Citation: Pilli, L.E.; Gonsales, F.I.; Mazzon, J.A. SUSTAINABLE BEHAVIOR: Propositions for Persuasive Communications, Proceedings International Marketing Trends Conference 2015.

INTRODUCTION

The noticed consumption patterns in the last decades are contributing to cause climate change and to increase the risks of deterioration in living conditions on the planet. The Anthropocene era, as some researchers designate this historical stage despite some controversy about when it has started, marks a transition from human activity as an influence over natural world to a dominance over it, meaning that effects of science and technology surpasses the effects of natural causes on the Earth systems changes, as noted by Crutzen & Steffen:

As a result of increasing fossil fuel burning, agricultural activities, deforestation, and intensive animal husbandry, especially cattle holding, several climatically important 'greenhouse' gases have substantially increased in the atmosphere over the past two centuries. (2003, p. 252)

The IPCC reports that climate change is unequivocal and CO₂ atmospheric concentration, having anthropogenic activity as the prevalent cause, is the main driver of the phenomena that will persist for many centuries (IPCC, 2013). Moreover, outcomes are likely to, negatively, affect biodiversity and global economy and to be unevenly spread, with populations that are already more vulnerable, due to the socio-economic development, being also more vulnerable to this consequences. All in all, working to reduce global warm is a necessity to be coupled with adaptation and mitigation strategies at different levels including governments, public and private organizations and individuals (IPCC, 2014).

The interconnections among the causes and the variety and magnitude of possible outcomes characterize climate change as a wicked problem (Rittel & Webber, 1973). In this context, social scientists could contribute to the balance between human needs and natural resources availability, through studies to promote pro-environmental behaviors (Kazdin, 2009), the ones that, conscientiously, minimize the consequences of human actions on the natural and built world (Kollmuss & Agyeman, 2002).

This article is a collaborative effort, attending Kazdin's call, since it suggests a theoretical model by articulating different judgment and decision theories, which may assist the creation of effective marketing communication campaigns towards changes of consumption habits.

Sustainable Behavior

In order to, precisely, shape the class of behavior that this study targets, it is necessary to define sustainable behavior and the different expressions of such performances.

The proposed definition arises from three different explanations that can be considered as complementary. First, prosocial behavior is the performance of voluntary and intentional actions resulting in benefits to another, regardless the motives of such actions (Eisenberg & Fabes, 1990; Eisenberg & Miller, 1987). Second, Stern (2000) understands an environmentally significant behavior as a performance intended, from the individual perspective, to improve the environment. As noted above, Kollmuss & Agyeman (2002) defines pro-environmental behaviors as conscientious actions directed to minimize effects of human activities on the environment.

Building from these ideas, sustainable behavior is defined as a voluntary behavior intended, from the individual perspective, to benefit the others or the natural or built environment. This definition emphasizes two key features of sustainable behavior present in the effort of previous cited authors. First, the focus is on the action's intent instead of the action's effect, acknowledging that, due to the complexity of wicked problems, the consequence of the behavior is subject to uncertainty. Second, the target of a sustainable behavior may be either the natural or the social environment and this is important since the effect of changes on Earth system may impose risks that are different in substance and likelihood to different populations.

Several classes of behaviors align with the proposed definition as proposed in literature. One possible definition for such classes proposes that sustainable behaviors may be environmental activism leading to involvement with environmental demonstrations or organizations and aiming to influence the outcomes of public policies and behavior of general population; non-activist behaviors in public sphere like environmental citizenship (signing petition, becoming a member or financially supporting environmental organizations) or supporting public policies aiming to favor the environment; private sphere environmentalism involving the purchase, use and disposal of products impacting the environment; other kinds of behavior, like influencing the organization that individual works for to adopt sustainable behavior (Stern, 2000; Stern, Dietz, Abel, Guagnano, & Kalof, 1999).

Kazdin, (2009) classifies sustainable behaviors, in a way that extends the private sphere environmentalism, as: (a) restrictive behavior constraining a specific performance, like driving less or sharing the ride to work or taking children to school to decrease fuel consumption and its consequences to environment; (b) choices to perform some new or different behavior like changing from individual transportation modes to public ones; (c) technological choices or choices for products less aggressive to the environment, like purchasing a car that is more efficient in terms of fuel consumption either because it consumes less fuel or use a less pollutant energy source.

Article Outline and Objectives

Against this background, this work focus on private sphere sustainable behaviors and develops in four sections. The second (next) contains a literature review of behavioral models and theories applied to sustainable consumption; the third proposes a theoretical model for the development of communication arguments in favor of the desired (sustainable) behaviors; the fourth presents a semiotic analysis, based on Peirce's Theory of Signs, of a recent advertising campaign (from Brazilian producers of ethanol) in order to verify if the current practice of advertising campaigns relates, at some level, with the theoretical model proposed.

The main studies supporting the proposed theoretical model are the following: (A) framing effects theory (Kahneman, 2003; Tversky & Kahneman, 1981), which states that the presentation of a problem influences the individual's process of judgment and decision by increasing the salience of attributes or elements involved in the decision; (B) prospect theory (Kahneman, 2003; Kahneman & Tversky, 1979), which demonstrates that choices are made by means of encoding options as gains or losses relative to a reference point, and that individuals tend to show higher risk propensity to avoid losses than to achieve gains (loss aversion); (C) social dilemma theory (Brewer & Kramer, 1986), which presents circumstances in which seemingly rational decisions from the point of view of the individual produce undesired results in a collective perspective; (D) working-self theory (Mandel, 2003), which describes the existence of identities and social roles dependent on social context, and that judgments and decisions are influenced only by the subset of active selves at any given time.

Briefly, the theoretical model recommends the use of the model described in Figure 1, incorporating elements of VBN Theory (Stern, 2000; Stern et al., 1999) and the Psychosocial Model (Bamberg & Möser, 2007). Communication execution should use cognitive elements that activate the New Ecological Paradigm and that deploy the framing described in the eight propositions drawn from prospect theory, framing effects, social dilemma and social identity theories.

At the end, a comparison of the model propositions with the semiotic analysis findings reveals discrepancies and similarities between theoretical teachings and advertising or marketing practice. Thus, it is evident the opportunity to promote a rapprochement between scientific research in the field of consumer behavior and the practice of marketing communications, in order to encourage environment-friendly choices.

LITERATURE REVIEW

This section starts with a brief review of sustainable behavior theories, aiming at identifying the psychological elements that should be present in a theoretical model that supports communication development for fostering sustainable behavior. It is not in the scope of this paper to criticize or to propose revised or new general theories of sustainable behavior, but it is important to identify the common elements that will drive the authors toward the proposed objectives.

A Theory for Sustainable Behavior

Concisely, sustainable behavior has intention to action as an antecedent and a series of psychosocial variables causing the latest. Moreover, situational factors moderate the relation between intention and behavior.

In **Error! Reference source not found.**, a summarized model describes the relationship among psychosocial variables and sustainable behaviors. The use of elements of different models allows the identification of an exhaustive inventory of the concepts involved in the activation of environmentally significant behaviors. Almost every concept presented has been submitted to some empirical testing, and the most robust model (Bamberg & Möser, 2007) is adopted when concepts of diverse models are similar or occupies different positions in causation chain. In addition, the other models will complement and deepen the understanding of the main one. After a brief explanation of the figure, an investigation of the concepts will follow.

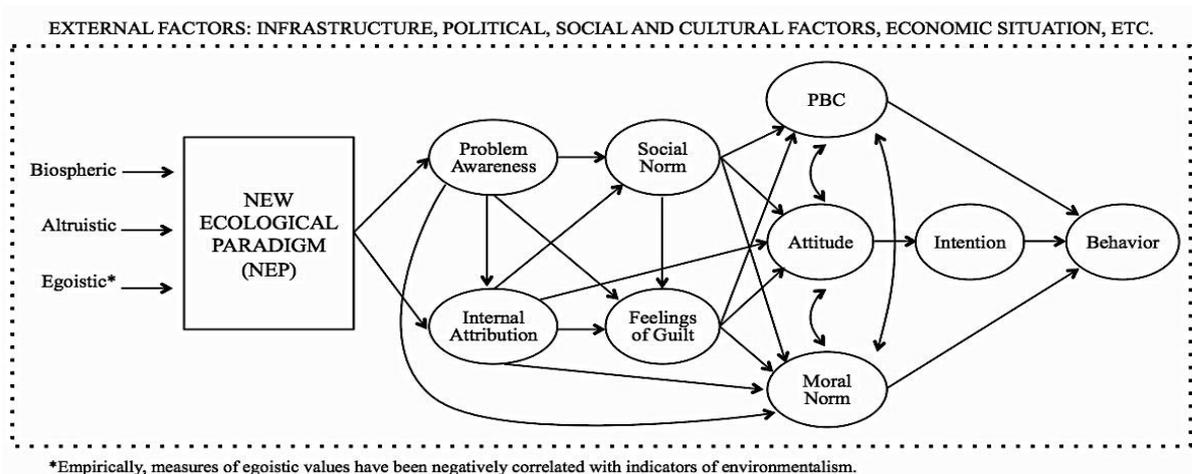


Figure 1 - Integrative Psychosocial Model

The Value-Belief Norm Theory (VBN), which offers the first elements at the left of **Error! Reference source not found.**, builds from the following broad proposition:

“... norm-based actions flow from three factors: acceptance of particular personal values, beliefs that things important to those values are under threat, and beliefs that actions initiated by the individual can help alleviate the threat and restore the values.” (Stern et al., 1999, p. 83)

Stern proposes that altruistic, egoistic and biospheric values relate to the perception that human actions cause damages to Earth systems, a notion defined New Ecological Paradigm or NEP (Dunlap, Van Liere, Mertig, & Jones, 2000). Altruism contributes while egoism inhibits NEP (Stern et al., 1999) and the emergence of biospheric value was proposed but not empirically tested (Stern, 2000).

From this point, the main source of the figure is a model that rests on the deployment of structural equation modelling, in a meta-analytical fashion, allowing for the confirmation of the causal path as well as an assessment of the strength of the proposed relationships (Bamberg & Möser, 2007). It is important to notice that this model is not a negation of VBN, it is an extension of it since it accounts for the relations proposed by the earliest with more detail and it is supported by a more robust statistical model.

As stated by the authors, the main theoretical inspirations for this model are the Norm-Activation Model – NAM (Schwartz, 1973, 1977) and the Theory of Planned Behavior - TPB (Ajzen, 1991), the first also being a support for VBN. Then, problem awareness, including awareness of and knowledge about the issue are cognitive pre-conditions to trigger the proposed psychosocial model. Internal attribution is the recognition that individual actions causes the environmental harm and, combined with problem awareness, lead to a comparison between one's behaviors and a social norm that is a perceived social pressure of behavior conformance. The incongruence between behavior and social norm mounts guilty, that is a negative emotion initiated by the perception that one's behaviors caused or is involved or associated in the causality of an aversive affair.

At this point, these elements will combine to form a new layer of psychosocial processes, presented as perceived behavioral control (PBC), attitude and moral norm. PBC is individual perceived ability to perform the expected behavior; attitude is the individual's enduring global evaluation of an object that influences behavior; and moral norms are one's experienced sentiments of duty to engage in a specific conduct. Lastly, these variables set the ground to the emergence of intention to act that precede behavior.

A context embeds this psychosocial process providing situational elements that facilitate or prevent sustainable behavior, including external factors, like infrastructure, political, economic and social factors, among others and individual variables, like personality traits and socio-demographic characteristics. (Kollmuss & Agyeman, 2002).

Norm-Activation Model (NAM). As proposed by NAM, personal or moral norms mediate pro-social behaviors, which are tied to a higher-level cognitive structure of needs and values that configures the internal motives, leading the individual to act in benefit of others necessitating help. This idea matches the definition of altruism:

“Altruistic motivation refers to intentions or purposes to benefit another as an expression of internal values, without regard for the network of social and material reinforcements.” (Schwartz, 1977, p. 222)

The normative explanation proposes that norms influence behavior via expected sanction or rewards that may result from the action perceivably related to the norm. A moral norm is an individual expectation about own behavior, internalized from social norms and life history, resulting in a sense of obligation to comply with the focal behavior. The anticipated rewards or sanctions relate to self-concept evoking pride (guilty), security (self-deprecation), higher (lower) self-esteem (Schwartz, 1973, 1977).

Therefore, NAM is a process that develops through perception of adverse consequences of own behavior, attribution of responsibility and personal norm construction. In order to the moral norm to induce behavior, it is necessary that the individual ascribe the responsibility to the self. This procedure is characterized in Bamberg & Möser (2007) propositions, **Error! Reference source not found.**, that involves problem awareness and internal attribution as pre-conditions to moral norm activation.

Values. Values are beliefs related to desired end states or styles of comportment, surpassing specific circumstances and orienting judgment and choice of behaviors, objects or people. Moreover, they are organized in a system that prioritizes among the values through relative importance ordering (Schwartz, 1994).

The author classifies a large value inventory accordingly to motivation that they serve and, then, distribute them in a circular continuum as a function of its interrelationships. VBN postulates that activation of moral norms that leads to environmentally significant behaviors are motivated by egoistic (self-enhancement cluster), altruistic (self-transcendence cluster) and an emergent biospheric value, not described in Schwartz's theory (Stern, 2000; Stern et al., 1999). Self-enhancement is a motivation pursued through values reflecting power, achievement and hedonism that highlight social superiority, esteem and self-centered satisfaction. In contrast with this, self-transcendence is pursued via values related to universalism and benevolence, which are concerned to enhancement of others and transcendence of selfish interests.

Completing this motivations continuum, values related to openness to change and conservatism is in opposition to each other. Values expressing aspiration for affectively pleasant arousal, for mastering and for inherent curiosity in newness reflect openness to change, while values conveying subservience of self to social norms and defense of prevailing group arrangements mirror conservatism. Empirical tests of values composing openness to change did not connect such motivations to NEP, in the context of VBN.

Attitude and Theory of Planned Behavior (TPB). TPB is “a theory designed to predict and explain human behavior in specific contexts” (Ajzen, 1991, p. 181). A focal idea in this theory is intention to action, which represents the motivational driver leading the individual to perform a behavior, leading to a prediction that the stronger the intention, more likely is performance of the specific behavior, considering the existence of volitional control over behavior.

In TPB, the variables that play a role in behavioral intention are attitude toward the behavior, perceived behavioral control and subjective norm. Attitude is a global evaluation, varying in some bipolar scale like unfavorable to favorable, resulting from cognitive and affective assessments of the attitude's target. Evaluation is a natural process derived from beliefs formation about the object, and each belief generates an association between object and attribute. Overall attitude is contingent on subjective value of the attribute and the intensity of association and only beliefs accessible in memory influence attitude in a particular moment. Moreover, attributes are valued positively or negatively and people tend to favor behaviors with expected desirable consequences and to avoid behaviors with expected undesirable outcomes (Ajzen, 2001).

Although some extent of volitional is present in most of behaviors, its performance also depends on situational variables, as availability of resources and opportunities. In view of TPB, perceived behavioral control is the subjective perception of easiness or difficulty to perform a behavior and it can vary across occasions and actions (Ajzen, 1991). In a meta-analytical analysis of experimental studies using actual behaviors as dependent variables, treatments changing situational conditions increased the adoption of environmentally significant behaviors. A few examples of such treatments are moving recycling bins to a more convenient place, offering low-flow showerheads to save water, prompting with reminder about when to perform the next behavior (like “turn-off lights when leaving the room”) (Osbaldiston & Schott, 2012).

Lastly, subjective norms are feelings of social pressure evoked by beliefs that relevant reference individuals or groups like family, friends and other social groups support or condemn a specific behavior. In TPB, a subjective norm is an antecedent of behavioral intention while in **Error! Reference source not found.** its effect over conation is indirect.

All in all, the more favorable the attitude, the higher the perceived behavioral control and the more intense the subjective norms, more likely the behavior is to be performed, following prediction from TPB.

FOSTERING SUSTAINABLE BEHAVIOR – A MODEL FOR PERSUASIVE COMMUNICATION

Obviously, any communication strategy aiming to promote sustainable behavior must consider the elements of the psychosocial model, as well the situational variables, presented in the literature review. However, developing communication stimuli, to trigger the mental processes already described, implies in encapsulating a narrative in such a way to enable information processing that activates such processes and to evoke the desirable behaviors. To this goal, investigation of a different set of theories permits the derivation of propositions supporting a theoretical model.

Prospect Theory and Framing Effects

Prospect theory states that individuals take expected changes in well-being, instead of expected end states, in consideration during decision-making. This process comprises two distinctive phases. First, the edition of available information through a series of logical operations aiming to simplify the offered options determine the final options representation, under the influence of problem structure, the way it is presented and the editing sequence. Second, the assessment of options resulting in the selection of the most valuable one, through a function that has higher sensitivity to losses in comparison to gains (loss aversion) as one of its main characteristics (Kahneman, 2003; Kahneman & Tversky, 1979).

The choice or conception of actions, outcomes and contingencies, from the decision maker perspective, existent in the choice environment, as well as his / her norms, habits and characteristics, affects the reference adopted by the individual (Thaler & Sunstein, 2008; Tversky & Kahneman, 1981). Problem configuration constrains the decision-making process inducing options' judgment on most accessible attributes or elements. Accessibility relates to the idea that some thoughts come easier to mind than others, due to stimuli salience, attention, training, associations and priming (Kahneman, 2003).

Furthermore, three possibilities of framing straightly connect to prospect theory parameters. First the presentation of an option as gains or as losses; second the presentation of options as a conjoint or as a sequential and independent evaluation; and third the choice of the reference point that may turns gains in losses and vice-versa.

Health related behaviors. Several experimental studies, testing the framing effects of presenting options as gains or losses, tested this theoretical stream in the personal health domain, which offers the possibility of engagement in sustainable behavior, since it requires changing or performing new behaviors. The inputs from these studies come from approaches that help understanding framing effects and extending behavior typology.

Some different approaches deployed framing attributes, when the key product attribute was presented as positive or negative; goal framing, when the outcome of the behavior is presented as positive or negative; and risky choices framing, when description of option are in terms of success or failure rates. Experimental evidences confirm the effects of attributes and risky choices framing but do not confirm such effects for goal framing. Furthermore, positive attribute framing is more effective than negative attribute framing since it evokes positive associations toward the option. In the other hand, negative risk framing is more effective than positive risk framing and the explanation rests on loss aversion derived from Prospect Theory (Levin & Gaeth, 1988; Levin, Gaeth, Schreiber, & Lauriola, 2002; Levin, Schneider, & Gaeth, 1998).

In addition, there is a distinction between preventive behaviors that individuals should adopt to avoid development of health condition (like use of sunscreen) and other that individuals should adopt to detect health condition (like to perform a mammography). In terms of prospect theory, preventive behaviors are the risk averse option taken to preserve health and should be positively framed. In the other hand, detection behaviors are the risky option since it can reveal the health condition and should be negatively framed. Evidences

from literature confirm that negative framing is more persuasive for detection behavior, but evidences are ambiguous for preventive behaviors since some studies favors the positive framing while others have found no effect (Rothman, Salovey, Antone, Keough, & Martin, 1993).

Propositions from Prospect Theory and Framing Effects. Some specific propositions support the development of communication to persuade the adoption of sustainable behaviors among consumers.

The first proposition is that preventive sustainable behaviors are the risk averse option, since they serve to preserve the environment from damages. From this perspective, communication claims framed as gains tend to be more persuasive to foster behaviors like consumption reduction of water and electricity or to favor choice of renewable energy sources.

Proposition 1. *Communication claims for preventive sustainable behaviors are more persuasive when framed as gains.*

The second proposition states that messages framed as losses foster detective behavior, like assessing ones' carbon footprint, more effectively compared to the same messages frames as gains. This pattern is expected since detective sustainable behaviors are the risk option, which can reveal the inadequacy of individuals' consumption pattern.

Proposition 2. *Communication claims for detective sustainable behaviors are more persuasive when framed as losses.*

The third proposition sustains that options described as functions of attributes are more persuasive when framed positively, since it evokes positive associations to the sustainable options or behaviors. Instances of such decisions are choices of low-consumption lamps that should be framed by the amount of energy it saves or low-flow showers or tap to be framed by the amount of water it saves.

Proposition 3. *Communication claims framing attributes are more persuasive when positively framed.*

The fourth proposition asserts that communication framing risky options should use loss framing and, once again, loss aversion derived from Prospect Theory explains this pattern. An example of this framed is to inform the likelihood of a water shortage if reduction in water consumption fails.

Proposition 4. *Communication claims framing risky choices are more persuasive when framed as losses.*

Social Dilemmas

A social dilemma arises when the individual benefit of exploiting a shared finite resource exceeds its costs. However, if the decision to consume such a supply seems rational from an individual point of view, it leads to a collective tragedy due to the collapse of the public resource, once there is no technical solution to assure satisfaction of the group demand. The individual rationality rests in the fact that positive utility of consumption is individually computed and the cost is shared among the community, leaving the individual better off when consuming in the short term and the community worse off in the long term. This dilemma applies to overpopulation, water and energy consumption, air pollution, among others (Dawes, 1980; Edney, 1980; Hardin, 1968; Kollock, 1998).

One important variable explaining the individual willingness to cooperate is the group size, and the smaller the group more likely is the individual to behave in favor of the group (Brewer & Kramer, 1986; Dawes, 1980; Hamburger, Guyer, & Fox, 1975; Kerr, 1989). One account for this phenomenon is that as group size increase, perceived self-efficacy decreases.

Perceived self-efficacy is the individual's belief that his or her own behavior is effective to support the achievement of communal goals (Gupta & Ogden, 2009; Kerr, 1989).

A social dilemma manifests, or can be framed, in two distinct ways. The first one, as explained above, is through the individual withdraws from a collective pool of resources (commons dilemma) and the other one is through individual provision to a pool that generates public goods. While logically equivalent, since both situations refer to the necessity of individual sacrifice in favor of the group, they are psychologically different. In a common dilemma, one need to decrease the own consumption of a good possessed collectively; but in a public good situation, one need to increase the contribution of an individual possession to a social pool of resource (Brewer & Kramer, 1986; Dawes, 1980).

Experimental evidences suggest that people tend to be more cooperative in a common dilemma frame than in a public good. Moreover, the larger the group size, more intense is the behavior adjustment in public goods context, with individual keeping more resources to themselves. Finally, when the identity is socially defined, feedback about resources depletion is more effective under the common dilemma context (Brewer & Kramer, 1986). These results are consistent with Prospect Theory, since individuals tend to be risk seeking in future to avoid losses in short term, when public good provision setting is present. In the other hand, in a common dilemma situation, any withdraw from the pooled resource is a gain to be juxtaposed to the perceived loss in the long term.

Proposition from Social Dilemmas. One important observation is that Prospect Theory is still supporting propositions resulting from social dilemmas. The initial idea is that commons dilemma, in which individuals draw from a pool that cannot renew resources with the same intensity of consumption, provides a more efficient communication framing when compared to a public goods framing. The superiority of the commons dilemma framing rests in the fact that social dilemma pose risks to society welfare, and the public goods demand the individual to lose some owned resource increasing the perceived risk to the self. This perspective leads to a risk-averse behavior that means to keep more for himself or herself, increasing the collective hazard.

Proposition 5. *Communication claims aiming to foster sustainable choices are more persuasive in commons dilemma framing.*

Moreover, immediacy of consequences and the group size involved in the target sustainable behavior also influence consumers' response to communication efforts. First, the more proximal is the threat, or the depletion of shared resources, more risky is the choice involved. The more risky is the choice, more risk averse is the behavior in a public goods framing and less the individuals contribute to share pool of resources, turning public goods framing even less efficient.

Proposition 6. *The more proximal is the negative consequences of choices, the more effective is the commons dilemma framing compared to public goods framing.*

Second, the larger the group affected the less efficient the public goods framing, since de-individuation and reduced perceived self-efficacy lead individuals to intensify risk aversive choices, meaning to keep more of possessed resources and to contribute less to the pool.

Proposition 7. *The larger the group sharing resources, the more efficient is the commons dilemma framing compared to public good.*

Identity

Identity, in one hand, is a consequence of individual interaction in social world and, in the other hand, drives relations in this same social world. In this sense, it is a socio-psychological

mediator between one's experiences and behaviors and the social world (Simon, 2004, p. 2). People, in different contexts, have different mental representations of the self, of the others and of the interdependencies between the self and the others. The construal are important antecedents of individuals' experiences including cognition, emotion and motivation (H. R. Markus & Kitayama, 1991).

Mentions of the relationship between behavior and size of the group, in the context of social dilemmas, are available in the previous section and this dependency relates to individuation and perceived self-efficacy. It means, that identity, or the construal of the self, the other and the interdependencies, mediates sustainable behaviors.

Furthermore, maintenance of identity and self-esteem offer intrinsic motivation for behaviors and connect the individual's experience to internal values (van Dam & Fischer, 2013). Experimental evidences (Brewer & Kramer, 1986; Mandel, 2003) confirm that the manipulation of social identities favors pro-social behaviors or conducts that conform to social norms. The possibility of such manipulation derives from the malleability of the self, which results in the working-self concept, suggesting that people have different representations of the self in different social roles or situations and that only a subset of selves is activated at any given time (H. Markus & Kunda, 1986).

From these findings, a new proposition is that activation of inter-dependent self, through social networks representation, increases the persuasiveness of communication. This representation tends to activate altruistic values, consistently to VBN, supporting the activation of social and moral norms proposed in the psychosocial model for sustainable behavior.

Proposition 8. *The activation of inter-dependent self in advertising campaigns is more persuasive than the activation of independent self.*

MODEL VERIFICATION: BRAZILIAN ETHANOL ADVERTISING CAMPAIGN

Due to favorable domestic economic scenario, to government incentives (for automotive industry) and to car sales increase, automotive fuel consumption grows every year in Brazil - in 2013, it has increased 5% compared to the previous year sales (Valor Econômico, 2014). Nowadays, most of Brazilian light vehicles fleet (vehicles up to 3.5 tons) is "flex cars", i.e., may run on gasoline, hydrous ethanol, or a mixture of both (any portion). Launched in Brazil in 2003, the flexible-fuel technology was widely accepted by Brazilian consumers: in 2004, it represented 22% of light vehicle sales and in 2011 it achieved 80%. According to projections (Valle, 2013), the share of flex-fuel vehicles will be approximately 75% of the total of light vehicles fleet in 2021.

Brazil is a pioneer and the world's second largest producer of ethanol fuel, the most common biofuel worldwide. Ethanol offers similar quality, availability, and also a number of advantages compared to gasoline, including lower price and lower greenhouse gas emissions (it's less polluting). But even under favorable circumstances to ethanol, gasoline still dominates the fuel choice in the country. According to ANP- Agência Nacional de Petróleo (National Agency of Petroleum) in 2013, gasoline consumption increased 11.9%, while hydrous ethanol consumption fell by 9.6% (UOL Economia, 2013).

The advantages of sugarcane ethanol over fossil fuels have been reported in several studies (Cerqueira Leite, Verde Leal, Barbosa Cortez, Griffin, & Gaya Scandiffio, 2009; Goldemberg, 2007; Goldemberg, Coelho, & Guardabassi, 2008; Martinelli & Filoso, 2008; Smeets et al., 2008) that also demonstrate the potential for growing the Brazilian production to replace, partially, the global use of oil. Among the advantages of sugarcane ethanol it is worth to mention: (a) reduced greenhouse gas emissions; (b) positive energetic balance, meaning that more carbon is absorbed during the production cycle than it is released in

consumption; (c) sugarcane supplies bagasse and lignin as energy sources to operate the industrial plant converting cane to ethanol and releases energy to be exported as electric energy. The cited authors identify and prescribe the points of attention to avoid the raising of environmental or social issues as the sugarcane culture expands, allowing for the balanced realization of the growth potential.

However, from consumer standpoint, ethanol is a competitive option to fossil fuel and, despite the past government stimuli and the present industry maturity, the success of behavioral change depends on the quality of marketing program. Therefore, the relevance of the product in the context of climate change and the need of fostering pro-environmentally behavior led to the choice of this instance of behavior as the empirical field for the present study.

Aiming to encourage ethanol consumption, União da Indústria de Cana-De-Açúcar (UNICA- Sugar Cane Industry Association) hired the advertising agency Borghi / Lowe, to create a campaign that would emphasize the positive impacts of ethanol to economy and environment. The integrated communication campaign, called "Etanol Completão" ("Ethanol, the big and whole solution", in a slangy way), was launched on November/ 2012 and aired for a month, with television and radio spots, as well as print ads in magazines and newspapers, a Facebook page, distributions of gifts (in gas stations, shopping malls, movie theatres) and a flex car raffled. According to UNICA, the campaign boosted by approximately 10% ethanol consumption during the November/December, while gasoline consumption fell.

Thereby, in order to compare the theoretical model earlier presented to the current market practice, a semiotic analysis of an advertising piece of "Etanol Completão" campaign will be held. The chosen piece was the main television spot (see Figure 1), once "TV" was the media channel that most impacted the public, according to the report conducted by Nielsen Institute (2013): 51% of 603 respondents spontaneously recalled the campaign, while 59% recalled it when stimulated. Most of these 355 people (98%) were aware of the campaign through television advertising. It is important to note that, as an integrated marketing campaign should present, all the other pieces has the same look & feel, the same actor, the same location (gas station) and the same main arguments of communication, among other things in common.

The semiotic analysis protocol

The semiotic analytical routine used here, based on Charles Sanders Peirce's Theory of Signs and adapted to marketing communication by Lucia Santaella (2003, 2000) and Clotilde Perez (2004), was chosen due to its capabilities of mapping and analyzing the production of meaning, either to infer or verify the communication effort goals (the sender intentions), or to forecast possible interpretations by the audience (potential effects of meaning on the receiver). The protocol investigates the three dimensions of the sign, equivalent to the three distinct - and complementary - perception levels defined by Peirce (1839-1914): qualitative- iconic (firstness, suggesting random ideas and comparisons), the singular-indexical (secondness, ideas of dependency) and conventional-symbolic (thirdness, idea of generality).

Briefly, the qualitative-iconic perspective contemplates the qualitative aspects (colors, lines and shapes, light, contrast, framing, camera movement, the tone of voice, etc.), which cause first impressions on the interpreter (the message receiver). In turn, singular-indexical perspective refers to space-time occurrences, as well as contextual and utilitarian issues. Finally, the conventional-symbolic perspective examines the cultural meanings, values and beliefs.

The qualitative-iconic level. Due to the audiovisual character of the TV advertising, this level analysis covers sound, textual and visual qualities.

Sound qualities: the movie has an original music from the beginning to the end, which comprises instrumental, sound effects (horn and engine slightly infantilized - beep beep,

vroom vroom) and or choral pieces, timed to specific points during the film. The pace is quick, cheerful, animated. The choir is composed mainly of male voices (including a male bass). In addition to the singers, the male protagonist has several lines, with his fast and lively voice. The supporting actors do not have lines, except for the mother and her children, two girls.



Figure 2: "Etanol Completão" film frames [<http://www.etanolverde.com.br/galeria.php?tipo=2>]

Referring to the textual qualities, the full script is transcribed below:

Sound effect: "Beep- Beep". **Chorus:** "Fill it up with ethanol for me."

Protagonist: (talking to the couple who has furniture on the car roof) "Hi, are you moving out? So, change to the completão fuel, change to Ethanol!"

(Talking to the man wearing a cap): "You are going to the office, right? So, fill it up with ethanol, that generates millions of jobs".

(Talking to the mother): "Hey, Mrs., what about giving an ecology lesson for your kids?"

Girls answer: "Ethanol, mommy!" **The mother replies:** "Fill it up with ethanol!"

Chorus: "The car engine gets so fast, Ethanol is the completão fuel! "

Protagonist says in off: " Fill it up with ethanol, the completão fuel!"

Chorus: "Ethanol is the completão fuel". **Sound effect:** "Vrom Vrom".

Visual qualities: the film is set in a gas station on a clear day. The protagonist is a pump attendant, wearing a white uniform and always holding a green fuel pump, who interacts with various clients (men, women, children). One by one, the clients arrive in their white/silver or colorful (red, orange, yellow or green) cars, they agree to fill up the car with ethanol, and get out of the gas station, cheerful and smiling.

The close cuts to characters' faces, especially during conversation with the pump attendant, convey an impression of familiarity and friendship. The first customers, a young couple carrying furniture on the car roof, are invited by the attendant to change their usual behavior and fill the car up with ethanol. The second client is a man driving a corporate car. As soon as he arrives at the gas station, the attendant offers ethanol, arguing that it generates jobs. The next customer is a young mother with two daughters (whose red and orange car is decorated with balloons and stickers) for whom the attendant remembers the responsibility of raising children and offers ethanol. Others two clients, a ostentatious guy with his tuned red and yellow car, and a young woman with her car covered up with plants, arrived, filled up the car and left the gas station.

Thus, the qualitative-iconic view provides a first impression of positivity, joy, family oriented and responsibly fun atmosphere.

The singular-indexical level. The TV advertising film depicts the everyday life in a petrol station at a Brazilian city, highlighting the ethanol purchasing situation. The protagonist, a young famous Brazilian comedian actor, is always holding a green fuel pump with the letter "e" in white, indicating that he recommends the clients to fill up the car only with ethanol (in Brazil there is no self-service, it's required by law that all fuel be pumped by an attendant). The fuel pump "doubles as" a microphone, suggesting that the clients are being interviewed by the attendant (the protagonist) in a relaxed and friendly manner. The white uniform that the attendant is wearing refers to a laboratory professional, an expert on the subject (in this case, automotive fuel). The emphasis on the "expert-attendant" recommendation can be understood by the Brazilian context, where flex fuel cars can also be fueled with gasoline. Thus, the decision (gasoline or ethanol) is made at each time of purchase - and may vary with every purchase.

The attendant's uniform has the Brazilian flag printed on the sleeves, indicating the origin of the product (Brazil is the second largest producer of biofuel, second only to the USA).

The mixed customers profile indicates the audience for whom the ethanol wants to be positioned: men and women, whatever their tastes, styles, moments of life, in short, all Brazilians who have flex fuel cars can benefit from ethanol. In the TV spot, the attendant chooses one of the many benefits of ethanol to effect persuasion, always considering the client's personal characteristics: to the young couple, he argues that ethanol is different from the usual, it's a change of habit; To the worker, he argues that ethanol creates jobs for Brazilians; To the mother, he argues that fueling with ethanol is an ecology lesson, for her daughters;

The last two customers are persuaded in a different way: to the ostentatious guy with his tuned red and yellow car, the choir sings that ethanol provides good engine performance; to the young woman with her car covered up with plants, the attendant makes hand gestures and facial expressions indicating that ethanol is the environment friendly choice.

At the end, two graphic symbols endorse the film. The first, a certification mark, says "Fill it up with ethanol, the completão fuel", highlighting the "multiple benefits" and the "whole-solution" aspects of ethanol. The second and last symbol is a letterform mark with a rounded letter "e" (from ethanol) illustrated with a blue sky, clouds, grass, yellow flowers, and a green car, next to the tagline "an intelligent behavior". It expresses, at the same time, a funny, childish mood and a serious, rational personality- transmitting a certain inconsistency or inner contradiction.

Thus, the singular point of view-indexical refers to the benefits of trust, guaranteed quality, satisfaction, smartness, environment friendly, popular preference, Brazilianness, egalitarianism, affordability, need for changing, good product performance.

The conventional-symbolic level. The light-blue and the saturated-green colors refer to nature and cleanliness, which are applied on the attendant uniform, on the cars, on the pump/microphone and on graphic symbols, reinforcing the ecofriendly attribute. These are also the colors of the Brazilian flag, which is applied on the sleeve of the uniform, symbolizing Brazilian pride.

Despite of the several clients shown in the film arriving and leaving the gas station, they never meet or interact with each other. They are all in their daily particular universe, and the attendant is the only one able to penetrate the individuals' isolation, through his friendly and interested way, which expresses some cultural principles relevant to this analysis, which are:

The renewal, the need to change: symbolized by the young couple moving out;

The importance of employment and altruistic posture: symbolized by the client in a corporate car, who buys ethanol to generate more jobs;

Parents responsibility in raising children, especially in teaching pro environmental behavior: symbolized by the mother exemplary teaching to her daughters;

The hedonistic consumption: symbolized by the guy with a tuned car;

Pro environmental behavior as a provider of happiness and well-being: symbolized by clients and attendant smiles, kids having fun, joyful music, balloons, and custom cars.

Trust and credibility: symbolized by customers giving their car keys to the attendant;

Freedom, personal empowerment and individual responsibility: symbolized by the scenes showing every customer choosing to fuel with ethanol.

DISCUSSIONS

The model prepositions for persuasive communication of sustainable consumption will now be compared with “Etanol Completão” campaign semiotic analysis (Table 1).

Table 1: Model Preposition x Market Practice Example

Model Prepositions	What the TV spot expresses	Parallel
(1) Persuasive claims for preventive sustainable behaviors are more persuasive when framed as gains.	The film does not show any negative scenario to be prevented	Not applied
(2) Persuasive claims for detective sustainable behaviors are more persuasive when framed as losses	The film does not show any negative scenario to be detected	Not applied
(3) Persuasive claims framing attributes are more persuasive when positively framed.	The film does not show product attributes, just positive consequences of its use.	Not applied
(4) Persuasive claims framing risky choices are more persuasive when framed as losses	The film does not present any risky or threatening situation (no losses).	Not applied
(5) Communication claims aiming to foster sustainable choices are more persuasive in commons dilemma framing.	The film does not communicate “Nature” (the air, oceans. . .) as a shared finite resource	Not applied
(6) The more proximal is the negative consequences of choices, the more effective is the commons dilemma framing compared to public goods framing.	The TV spot does not present any negative consequence of not choosing ethanol.	Not applied
(7) The larger the group sharing resources, the more efficient is the commons dilemma framing compared to public good.	In the TV spot, clients are or affected by any kind of shortage or negative situation.	Not applied
(8) The activation of inter-dependent self in advertising campaigns is more persuasive than of the independent self.	The arguments in the film are built based on personal interest, i.e., on the independent self (excepting for the man in a corporate car).	<input checked="" type="checkbox"/>

The comparison above overviews the discrepancies and similarities between the theoretical learnings and marketing practice. What outstands the most is the general positive atmosphere shown in the advertising film, leading to a total absence of information about the risks and bad consequences of not engaging in pro-environmental behaviors (in this case, not buying Ethanol). The joyful and happy pervading mood of the analyzed campaign may reveal how the environmental issues are being addressed by Brazilian advertising: there is nothing to worry about, nothing to be prevented.

Even with the fact that Brazilians are well known as friendly and generous people, the campaign do not explore the interdependent self in the most part of the TV spot. On the contrary, as the semiotic analysis revealed, all the clients-characters are shown in their daily particular universe, and the main arguments in the film are built based on personal interest, i.e., on the independent self.

A Synthesis for persuasive communication to foster sustainable behavior

In summary, persuasive communication to foster sustainable behavior should use the integrative psychosocial model as a background. Social and moral norms activation may result of identity manipulation making altruistic and biospheric values salient. It means the

incorporation of cognitive elements, revealing the issue and the ascribing behavioral consequences to individual behavior. It should also offer elements to increase perceived behavioral control to support favorable behavioral intentions and should be framed in commons dilemma context. Finally, the nature of behavior, preventive or detective, should drive the decision of framing the communication claim as gains or losses accordingly to prescriptions derives from Prospect Theory.

FINAL CONCLUSIONS

At the end, it is evident the opportunity to promote a rapprochement between scientific research in the field of consumer behavior and the practice of marketing communications, in order to encourage environment-friendly choices.

Limitations and Directions for Future Research

The current study attempted to provide a comprehensive overview of judgment and decision theories developed by the most prominent researchers in the field, with a subsequent empirical test, through a semiotic analysis, focusing on the advertising text as it is constructed by the sender (the sender's "preferred reading" of the text).

In order to validate the model propositions and to analyze the gap between message's emission (the intentions of the sender) and message's reception, it would be necessary to undertake experimental consumer behavior research designed to investigate audience perception, comprehension, interpretation, evaluation and responses to the stimuli.

Furthermore, the empirical assessment was deployed for one kind of behavior (different behavior performed in private sphere), one product (car fuel), and one communication campaign in Brazil. Despite the high relevance of the studied domain, these limitations prevent the generalizability of the observed lack of alignment between professional practice and theory, demanding the replication of the analysis across different kinds of behaviors and products.

Thus, this paper offer an initial theoretic background and is an invitation to further investigation and to the development of a marketing communications holistic approach towards pro-environmental behavior promotion.

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