AMERICAN UNIVERSITY OF BEIRUT

NORMS AND EFFICACY BELIEFS IN RELATION TO SELF-REPORTED LITTERING BEHAVIOR IN A SAMPLE OF LEBANESE IN LEBANON

by

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The present study examined the role of norms and efficacy beliefs in relation to self-reported littering behavior in Lebanon. More specifically, norms in the form of injunctive norms, descriptive norms, and sanctions were investigated in relation to self-reported littering behavior. Similarly, efficacy beliefs' relation to littering behavior was also assessed in the form of environmental self-efficacy and collective efficacy. Socio-demographic factors in terms of age, gender, marital status, educational attainment, and involvement in environmental groups were also considered.

A convenient sample of 300 Lebanese was recruited from different areas in Lebanon. Participants completed the following measures in a counterbalanced order to minimize order effect: Self-Reported Littering Behavior Scale, Personal Norms against Littering Scale, Perceived Littering Scale, Livability Quotient Scale, Sanctions Scale, Environmental Self-Efficacy Scale, and Collective Efficacy Scale. Descriptive, inferential and regression analysis were used to test predictors of littering behavior. Injunctive norms, environmental self-efficacy, and collective efficacy scores correlated mostly with self-reported littering behavior and they were considered to be good predictors of littering behavior above and beyond the socio-demographic factors of age, gender, marital status, and educational level. However, the descriptive norms and sanctions were not significant predictors of littering behavior in Lebanon. The implications and limitations of the study were discussed.

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CHAPTER I

AN OVERVIEW ON LITTERING BEHAVIOR

Littering is perceived worldwide as an environmental pollution (Ojedokun, 2011), and it is defined as the careless, incorrect disposal of minor amounts of wastes (Ong & Sovacool, 2012). Studies have shown that the most common littered items tend to be: paper, plastic, vehicle debris, packaging and beverage containers, and the most frequently reported littered items are cigarette butts, food remnants (apple, banana), and gum (Schultz et al., 2009; Schultz et al., 2013). The source of litter is generally pedestrians who do not use receptacles, drivers or motorists who do not use litter bags, recreational marinas with inadequate waste receptacles, and household trash scattered before or during collection (Schultz et al., 2009).

Littering has considerable aesthetic, financial and health-related disadvantages (Cialdini, Kallgren & Reno, 1991). In addition to being linked to crime (Brown et al., 2004), littering poses health threats, for humans and nature, that range from minor injury to death through water pollution, fire accidents, highway accidents, insect and rodent invasion, flooding by blocking draining systems, and a number of injuries from discarded cans and broken bottles (Geller, Winett, & Everett, 1982). Therefore, maintaining a clean environment is not only a distinctive characteristic of a livable city, but rather it is also important to protect public health and safety (Ong & Sovacool, 2012).

Some of the major findings on littering behavior were summarized in "Keep America Beautiful, KAB" study. Schultz et al. (2009) conducted a nationwide study on littering behavior using a multi-method approach including both self-report and behavioral observations. In the first set of studies, researchers observed thousands of individuals (N=9,757) in 130 locations across ten states evenly split between rural and urban, and along different locations i.e. fast food, recreation, gas stations, city centers, rest stops, medical/hospital, bars/restaurants and recreation areas. Participants were monitored as they moved around and their disposal behaviors were recorded. Results have shown that the most commonly found existing litter was cigarette butts, followed by miscellaneous paper, food wrappers and food remnants. Researchers also found out that the majority of littering behaviors occurred with notable intent, and that age negatively correlated with littering behavior.

The second set of research in KAB study involved 102 intercept interviews with a small sample of individuals who were observed disposing litter either properly or improperly. 43% indicated that they had littered in the past month. Personal obligation not to litter was found to be significantly related to lower rates of littering behaviors.

The third set of research involved a nationwide telephone survey among 1,039 respondents. Surveys included community livability, personal norms against littering, attitudes about litter, motivators and barriers for littering, and demographics variables. Results indicated that community appearance (including cleanliness, low rates of visible litter, maintained streets and sidewalks, attractiveness of plants, flowers and trees) was associated with lower rates of reported littering behaviors. Littering was also more frequently reported when the person was in a hurry, when the item was biodegradable and when there is a sense that someone else would pick it up.

A. Littering behavior: Theoretical Framework

Theoretical frameworks of the early 1970s assumed that increasing knowledge and environmental awareness will automatically result in pro-environmental behavior (Kollmuss & Agyeman, 2002); and this is why yet till now most environmental NGOs and governments rely on spreading information to induce behavioral change and encourage sustainability (Kollmuss & Agyeman, 2002). However, more recent theories and empirical evidence show that disseminating knowledge and information does not necessarily lead to pro-environmental behaviors; and thus, factors other than information need to be considered for behavioral change in littering (Chawla & Cushing, 2007).

The present study is guided by the conceptual framework proposed by Wakefield et al. (2005) for environmental action: behavior intentionally undertaken to benefit the environment (Stern, 2000). Wakefield et al. (2005) laid out a comprehensive conceptual framework that incorporates the wide variety of potential determinants of environmental action including compositional (i.e. individual characteristics), contextual (i.e. neighborhood environment) and collective factors (i.e. social networks, community participation). The conceptual framework also studied the role of capacity, which refers to the skills and resources that empower individuals and communities to take action (i.e. norms, efficacy beliefs). Wakefield et al. (2005) conducted the study using a survey, and found out in a random sample of 500 households in Hamilton, Canada, that factors related to context (perceived environmental exposure to pollution), pro-social norms, efficacy beliefs, and collective resources (i.e. local social networks) play a stronger role than socio-demographic variables in determining environmental action. Building upon Wakefield et al.'s (2005) model, the present study will focus on the variables which are potential predictors of littering behavior, namely norms, environmental self-efficacy, and collective efficacy.

CHAPTER II

PREDICTORS AFFECTING LITTERING BEHAVIOR

A. Norms

Since norms are previously studied in relation to littering behavior, the construct of norms will be investigated based on the different components that were ascribed to them in the literature and these include the injunctive norms (Cialdini et al. 1990, 1991) or in other words, the cognitive component of norms (Heywood, 2002), the emotional component of norms which is defined as sanctions (Heywood, 2002) and the descriptive norms (Cialdini, Reno & Kallgren, 1990)**.**

1. Injunctive & Descriptive Norms

Norms were previously conceived by Schwartz (1977) as feelings of strong moral obligations that people experience within themselves to act in a pro-social manner. To determine the explanatory and the predictive value of norms, Cialdini, Kallgren and Reno (1991) proposed a theoretical refinement for the concept of norms by giving it a clearer definition. They divided the term norms into "descriptive norms", which refers to the perception of what most people “do”; and "injunctive norms" that refers to what most people "approve or disapprove of".

The descriptive norm describes what is typical or normal; it helps individuals decide and choose how to behave in a given situation (Cialdini, 1988). For example, from an environmental point of view, if a place is clean, then it is a sign that the salient norm is that cleanliness should be maintained. Injunctive norms dictate what should be done, and the resulting social sanctions for not abiding by the norms (Cialdini, Reno & Kallgren, 1990).

SELF-REPORTED LITTERING BEHAVIOR

A common finding in the empirical studies on littering behavior is that the act of littering is more likely to happen in a previously littered environment than in a clean one, suggesting that clean areas tend to remain clean whereas littered areas tend to get dirtier (Schultz et al., 2009). This observation has been explained by Cialdini et al. (1990, 1991) in terms of the power of the norms (injunctive and descriptive) in influencing littering behavior, and they have illustrated this in a series of nine empirical studies on littering behavior.

In addition to demonstrating the effective role of norms (descriptive and injunctive) in reducing littering behavior, Cialdini and his colleagues highlighted the fact that norms influence littering behavior when they are made salient. In one of their studies in natural settings (Cialdini et al., 1991), they examined the amount of littering that occurred in different experimental conditions (a) previously littered environment, (b) clean environment, (c) a confederate littering in a littered environment, and (d) a confederate littering in a clean environment. First, results showed that participants littered more in a littered environment than in a clean one. Second, under the conditions of high descriptive norm salience, a confederate littering in a previously littered environment shifted the attention of the participants to the salient descriptive norm, which is the presence of litter. In this experimental condition, participants littered even more in a previously littered environment because their attention was focused on the existing descriptive norm of the setting (littered or dirty environment). Another important observation is that the least littering occurred among subjects who saw the confederate littering in a clean environment, which indicates that the participants' attention was focused towards the descriptive norm of cleanliness since the environment was totally clean.

Cialdini et al. (1990) added to the significance of injunctive norms in bringing about behavioral change in littering through a particular observation, which holds that similar

concepts are linked in memory and can be activated by focusing a person's attention on a related concept. For example, in a study on littering, subjects littered least after reading flyers focusing them directly on the littering norm, littered progressively more frequently when reading flyers reminding them of an obligation to recycle or turn out lights and littered mostly when the message was not normative; for example, flyers that were reminding them of their obligation to vote.

Another study by Cialdini et al. (1990) showed the effect of the injunctive norms on reducing littering in a parking garage under four conditions (a) fully littered environment, (b) litter swept in a neat line against the wall, and (c) a confederate dropping a handbill in both situations. Results have shown that nearly no subjects littered when a confederate dropped a handbill into the environment where the litter was swept, because this setting provided them with a clue of clear disapproval for littering (injunctive norm saliency). It is worthy to note that the majority of the participants have already littered in previous days when the parking was full of litter (descriptive norm saliency). This study confirmed the theoretical assertion that both descriptive and injunctive norms can elicit change in littering behavior. Cialdini et al. concluded that the descriptive norms are not more powerful than injunctive norms and vice versa, but rather it is the differential focusing of attention on one or another sort of norm that is the key for enhancing compliance with the norms against littering.

In the same line, Torgler, Frey and Wilson (2009) supported the descriptive norms' influence by showing that the environmental behavior of individuals is systematically influenced by the perception of others' behavior. They demonstrated that believing that littering is too common reduces people's environmental values and consequently their environmental behavior, whereas individuals who believe littering is rare act upon a higher environmental value and exhibit more environmentally conscious behaviors.

As a result, Torgler et al. (2009) argue that individuals do not necessarily engage in pro-social behaviors because they are benefiting directly from that action, but rather, they act according to the way the majority of the public is acting. They defined this phenomenon as conditional cooperation or conformity and they explained it using other common incidents. For example, people are more likely to donate if there is already some money in the transparent box of donation, and more likely to contribute to social funds when there is a higher percentage of individuals making a contribution (Torgler et al.). Similarly, in an environmental context, if most individuals don't throw litter in a public place, others would feel obliged not to litter. In a field experiment, Keizer, Lindenberg and Steg (2008) found out that the presence of graffiti, or the presence of a few unreturned shopping carts standing around in disarray at a parking garage more than doubled the number of people who littered. Overall, these studies suggest that in case a norm violation is seen most commonly, other norm deviances will be observed (Torgler et al.).

Cialdini (2003) added that the informational campaigns that depict the problem of littering as unfortunately frequent jeopardize their persuasive efforts by creating the normative message that "many people are doing this". The author suggested that the most effective long-term method to reduce litter happens by cleaning up the environment and keeping it clean. As such, it would be beneficial to highlight descriptive norms when pro-environmental behavior is prevalent (Cialdini).

2. Sanctions (the Emotional Component of Norms)

While norms have been conceptualized in terms of injunctive and descriptive components (Cialdini et al., 1990, 1991), they have also been defined in the form of cognitive and emotional dimensions (Heywood, 2002). The cognitive component of norms “obligation” comprises the memory repository of social standards – which is similar to the injunctive

norms previously discussed. The second component of norms “the emotional component” refers to internal sanctions and includes all the feelings and the physiological states (shame, guilt, and embarrassment) that result when the actual behavior is consistent or not consistent with the obligation (Heywood, 2002).

These two components were previously explained by Jackson's Return Potential Model (RPM) (Jackson, 1975), which represents expectation of potential return for appropriate behavior in a normative setting. Expectation refers to the cognitive aspect of norms or obligations, and the potential return refers to the emotional component of norms or sanctions (Jackson). Together the emotional and cognitive components determine the power of the norm, that is, the norm's ability to affect behavior (Heywood, 2002). In the RPM, the cognitive component is determined by its crystallization, which refers to the level of agreement about the obligation and the emotional component is determined by the intensity of the sanctions resulting from the behavior (Jackson).

Through the process of socialization, individuals learn obligations when they are sanctioned by significant others (Heywood, 2002). Sanctions can be formal (imposed by an organization with the power to punish or reward for violations or compliance with rules), informal (imposed by other people through rewards of admiration such as a smile or a praise, or through punishment such as a glance, a laugh or a rebuke), or internal (imposed by one's self such as pride, guiltlessness, or shame and guilt and this affects self-esteem and self-image) (Grasmick & Bursick, 1990). Sanctions are also additive, which means that the intensity of a norm is the sum of the internal and informal sanctions (Heywood & Murdock, 2002).When the obligation is internalized, the norm will have the power to influence behavior even if no one is around (Grasmick & Bursick, 1990), and shame and guilt will be the result for behaving inappropriately (Heywood, 2002).

For example, in a study conducted by Heywood (2002), 87% of the participants reported having the obligation to never litter. Failure to meet this obligation resulted in feelings of shame among 87% of the respondents, embarrassment (85%) and guilt (88%). This highlights the important role of obligation as a cognitive standard against which one's own behavior and others' behavior can be judged as appropriate or inappropriate. Also, in fact, Grasmick, Bursik and Kinsey (1991) demonstrated that in reality, threats of shame and embarrassment reduce the likelihood of littering and other illegal behaviors more than the threat of legal sanctions.

B. Environmental Self-Efficacy and Collective Efficacy

Chawla and Cushing (2007) pointed out that having a sense of individual efficacy (confidence in oneself and in one's capabilities) and a sense of collective efficacy (belief in the capacities of one's group or community) are essential conditions that foster responsible environmental behavior. Both constructs are derived from the Social Cognitive Theory, which maintains that the choices that individuals and organizations make are influenced by the strength of their efficacy beliefs (Bandura, 1997). Since efficacy beliefs at both the individual level (environmental self-efficacy) and the group level (collective efficacy) are related to important individual and organizational outcomes (Chen & Bliese, 2002), both will be tackled in the present study. Theoretically, environmental self-efficacy and collective efficacy are seen as predictors of pro-environmental behavior (Caroll et al., 2005; Chawla & Cushing, 2007; Hungerford & Volk, 1990; Stern, 2000; & Wakefield et al., 2005). Some studies examined the role of efficacy beliefs in relation to environmental action (Lubell, 2002; Wakefield et al.,2005), or specifically to littering behavior (Ojedokun & Balogun, 2011); however both Lubell and Wakefield et al. suggested the use of more accurate

measures to assess these two constructs to better determine their significance in the environmental context.

1. Environmental Self-Efficacy

Environmental self-efficacy is defined as the individual's confidence in his/her ability to perform behaviors that can solve environmental problems regardless of certain barriers that he/she may encounter and the belief that one has the necessary knowledge, skills and ability to perform successfully (Ojedokun & Balogun, 2011). Bandura's (1997) construct of perceived self-efficacy has been used to identify beliefs about personal capacity in several domains; for example, academic self-efficacy, parenting self-efficacy, organizational self-efficacy, and others as well since self-efficacy scales are developed for any domain that includes goals to be accomplished or achieved. Bandura emphasized the importance of the self-efficacy construct for two reasons: efficacy beliefs predict goal performance in a specific domain, and because it is specific to a particular domain, it is a more powerful predictor than other measures such as locus of control, perceived self-control, self-concept or cognitive competence. Second, whereas it is difficult to measure actual performance directly, self-efficacy is relatively easy to assess and correlates strongly with key aspects of performance such as learning and achieving more and working harder.

Theoretical frameworks by Stern (2000) and Hungerford and Volk (1990) discussed various factors involved in encouraging pro-environmental behaviors in adults and both emphasized the importance of environmental self-efficacy in influencing behavior. Hungerford and Volk identified three factors that contribute to responsible environmental behavior namely: (a) "entry level variables" which predispose people to be interested in protecting the environment, (b) "ownership variables" by making oneself knowledgeable about certain environmental issues, and (c) "empowerment variables" which include having

the skills to use environmental action strategies and believing that one can be successful in carrying those strategies. Norms that were previously discussed are part of the "entry level variables" and efficacy beliefs are part of the "empowerment variables".

Similarly Stern (2000) value-belief-norm theory proposes that people are motivated to act pro-environmentally when they value the human environment, when they believe that they can have an effect on environmental issues (environmental self-efficacy) and when they realize that social norms prescribe that they should act. Both Stern and Hungerford & Volk (1990) models support the notion that norms and efficacy beliefs are significant predictors of pro-environmental behavior, thus these factors will be investigated in relation to littering behavior in the Lebanese context.

2. Collective efficacy

Besides norms, collective efficacy is believed to be an important determinant of environmental action (Wakefield et al., 2005). Collective efficacy refers to the belief in the ability to achieve goals while working together in a group (Carroll et al., 2005; Chawla & Cushing, 2007). Bandura (1997) emphasized that measuring collective efficacy may be an appropriate technique to assess the capacities of a community since it assesses how well people use their resources, how much effort they put into achieving the group goals and how persistent they remain in the face of internal conflicts, political challenges or social changes.

Collective efficacy is important to study because collective work was seen as more successful in bringing about change in society than individual self-efficacy (Chawla & Cushing, 2007). It has also been found to be a substitute of government regulation and control in environmental protection, as communities unite to get a better say in decisions affecting their neighborhoods (Northridge & Shepard, 1995, as cited in Carroll et al., 2005)

To determine the predictors of collective work in the community, Lubell (2002) developed a model of environmental activism based upon the collective interest model (Finkel & Muller, 1998), which maintains that people will participate in a collective endeavor when they believe in the positive collective outcomes and when they weigh the costs/benefits of their participation. Basic relationships in the collective interest model (Finkel & Muller, 1998) are summarized in the following equation:

EV = [(p8 + p1) * V] –C + B where EV stands for environmental activism, p8 stands for collective efficacy, p1 stands for personal efficacy, V stands for Value of collective good, and CB stands for costs and benefits of participation.

Lubell (2002) tested this model using a national sample of 1,606 US citizens and another sample of 460 citizens from five towns on Eastern Long Island, New York. The measures used were taken from the 1993 General Social Survey (GSS) that included items on environmental issues, and the Peconic Survey of Environmental Attitudes. Lubell acknowledged that both surveys were not explicitly designed to test the collective interest model but both surveys contained measures of most key concepts in his model. Lubell concluded that people's beliefs about collective benefits (collective efficacy) and their ability to influence collective outcomes (environmental self-efficacy) were directly related to environmental activism. He also explained that personal efficacy is misplaced if environmental activism is targeted at an unresponsive government or an ineffective group; thus he argues that collective efficacy depended both on beliefs about government responsiveness and capabilities (government efficacy) and on perceptions about whether other group members will cooperate in the collective endeavor (citizen efficacy). Therefore, people who believe that their government is responsive are more likely to engage in environmental activism. Lubell also suggested that a belief about "making a difference" is

more salient when citizens are actually engaged in activism behaviors. For example, participating in different type of groups and gaining experience with collective action may lead to increases in perception of environmental threats and personal efficacy as well as gaining other civic skills.

In the same line, Sampson et al (2000) argued that collective efficacy beliefs are important to group functioning, because they help individuals understand how organized capacity of action can produce results. In this sense, high levels of social capital (or norms) might be present in a group, but it is only when the groups' sense of collective efficacy is sufficiently robust that individuals of a group are compelled to pursue desired organized goals. They added that, in such a group, someone whose actions are inconsistent with group expectations is likely to be sanctioned by the other members.

3. Environmental Self-Efficacy and Collective Efficacy: Two Different Constructs

Chen and Bliese (2002) supported the notion that individual and collective efficacy are two distinct constructs; environmental self-efficacy is an individual level construct, whereas collective efficacy is a group level construct; and direct predictors of self-efficacy would not necessarily affect collective efficacy and vice versa. More specifically, sense of self-efficacy is gained through instructive modeling and by achieving mastery experiences in reaching sub-goals on the way to distant goals (Chawla & Cushing, 2007). Collective efficacy is gained through group members who are seen as role models, and through participating in groups that have shared goals and interest, and whereby opportunities to taste success happen through the accomplishment of these goals. It is also gained by establishing trust with group members, developing personal relationships and being with friends and having fun. By being part of a group, individuals also develop action skills, and projects have personal significance because it is initiated by themselves in a unified effort towards

achieving the same goal (Chawla & Cushing, 2007). Similarly, Bandura (1997) believed that young people acquire a collective efficacy through working with others for social and environmental change and unifying their efforts to accomplish shared goals.

In fact, individual self-efficacy and collective self-efficacy are mutually related because people are more likely to contribute to a group when they believe in themselves and their capabilities, while at the same time people are more likely to feel self-confident when they are supported by a strong group (Chawla & Cushing, 2007).

Many studies have shown that 50 to 80% of pro-environmentally active young individuals described activities such as free play, hiking, and camping as a significant experience, while others mentioned the importance of belonging to organizations like the scouts or environmental groups and the presence of examples of parents, teachers or other role models who show interest in nature and the environment (Chawla & Cushing, 2007).

It is important to study the role of environmental self-efficacy and collective efficacy as predictors of littering behavior because they can be a target for change through influencing people's opportunities to gain knowledge, providing opportunities to learn and practice action skills, and succeeding in achieving some valued goals.

CHAPTER III

OVERVIEW ON LITTERING BEHAVIOR IN LEBANON

In Lebanon, several researchers highlighted the importance of responsible environmental behavior specifically in energy conservation (Chaaban & Rahman, 1998), air pollution and transportation (Chaaban, Ayoub & Oulabi, 1999), and noise pollution (Fooladi,

2011). However, a literature search in PSYCHINFO and Google Scholar databases indicated that there are no studies related to the issue of littering in Lebanon.

Littering in the streets and the presence of garbage in public areas are still an existing problem in Lebanon (Economy and Ecology Online, EECOY, 2011; Armstrong, 2012). The unclean look takes away from Lebanon's beauty and Lebanon's attractiveness to its citizens and tourists. This is mainly caused by the irresponsible behavior of Lebanese citizens and the waste management salient problem in Lebanon (Armstrong, 2012). Another form of littering is manifested on a few sidewalks, streets or neighborhoods that are being blocked by stones, barrels or discarded furniture to prevent cars from parking. All of this is eroding the aesthetic quality of the urban environment in Lebanon (Khalaf, 2012). It is well known that tourism is greatly affected by the aesthetics of the country (Gabrielides et al., 1991), and unclean streets and places tend to take away from Lebanon's beauty and image as a touristic country. It is needless to say that cleanliness of the environment in general influences people's health, comfort and prosperity (Ong & Sovacool, 2012), and it is a sign of community shared responsibility (Ojedokun, 2011).

One of the major problems of littering is evident in the public beaches. Garbage pollution on the Mediterranean coastline was mentioned in a study conducted by Gabrielides et al. (1991) on 13 beaches across the Mediterranean coastline, in which the researchers indicated that, based on the nature of the garbage found on the shores (i.e. beverage containers made of plastic, metal and glass; food and cosmetics, mostly suntan lotion, plastic handbags, clothing, toys, and rubber mattresses, etc…), most of the litter is land-based, in contrast to the marine-based litter on the western European shores. This is also relevant to Lebanese shores who received attention from many organizations to protect the shores of Lebanon from pollution and littering (Operation Big Blue Association, OBBA, n.d.; Lebanon

Clean and Green, LCG, n.d.). It is particularly important to keep the beaches clean and litter-free because the Mediterranean Sea attracts tourists from all over the world, and most of the tourists spend their time at the beach (Gabrielides et al., 1991). Littered beaches create a big problem by being a major deterrent to tourists; which has many economic implications for the Mediterranean countries. In fact, Lebanon has signed 28 international agreements concerning the protection of the environment, out of which 13 conventions are related to the protection of the Mediterranean Sea (Djoundourian, 2007).

Various regulatory strategies have been developed in Lebanon to address the environmental pollution from different angles. The Ministry of Environment and Water Resources current laws pertain to the protection of natural sites, forestry, historical monuments and touristic sites, drinking water, sewage, marine pollution, air pollution, hunting, fishing, urban development, food control, housing and toxic waste disposal (Ministry of Environment, MOE, n.d.). The Ministry of Interior and municipalities made a Decree to stop the trash throwing and littering by imposing penalties on polluters, and forcing owner of un-built properties to fence their properties to prevent the overspill of dirt and rubble (Djoundourian, 2007).

In addition to the work of the ministries, many anti-littering campaigns on radios, televisions and websites aim at changing people's behavior or attitudes towards littering. In fact, there are more than 140 registered environmental non-governmental organizations in Lebanon that aim at raising pro-environmental awareness (Djoundourian, 2007). These community associations implemented many strategies to tackle the litter problem especially through cleaning the streets and the shores and promoting grassroots activities, and they are also working on encouraging recycling to minimize the waste management problem.

SELF-REPORTED LITTERING BEHAVIOR

The problem of littering from drivers in the car is obvious to any driver in Lebanon. This has taken the attention of Hyundai company in Lebanon, which launched in 2012 an anti-littering campaign with billboards at key locations in major Lebanese cities featuring piles of garbage bags, then the Hyundai company revealed their ecological theme with the saying "Al nadafa hadara – don't litter and drive" meaning "cleanliness is civilization, don't litter and drive". To further reinforce the culture of cleanliness and environmental friendliness among the Lebanese drivers, Hyundai also sponsored the distribution of reusable trash bags to drivers at key traffic junctions (Hyundai, 2012). On the television, BankMed environmental awareness campaigns focused on the benefits of changing citizens' behaviors. For example, Minister of Environment H.E. Nazim el Khoury and other public personalities appeared in announcements encouraging people to stop littering, reduce car usage and to adopt other pro-environmental behaviors.

With the increasing crowd of pubs and nightlife in the streets of Beirut, Hamra, or Gemmayzeh, the people who take the pavements to chat while smoking often throw their cigarette butts on the ground (Stoughton, 2013). As it is evident in many studies (Schultz et al., 2009; Schultz et al., 2013) that cigarette butts are the most commonly littered items, a few people realize that if these toxic stubs are not disposed of properly they can be transported through drainage systems into rivers and beaches, and by this poison native wildlife (Stoughton, 2013). For this reason, a group of Lebanese engineers designed "Urbin", which is a bin specifically made for the smokers to get their attention to the necessity of putting the cigarette butts into the litter bin and to consider cigarette butts as litter (Stoughton, 2013).

One of the major anti-littering NGOs "Ana Ma Bkebb" (which means "I don't litter") aims at raising awareness against littering in Lebanon. For the past two years, they have

organized trash can painting competitions in Beirut and other areas in Lebanon. The project was called "Yes You Can", whereby children and adults painted trash cans. The aim of this project was to make the trash can attractive and recognizable, and to draw attention to it, while at the same time raise awareness against littering. Those trash cans were placed in public and private areas, including schools, public parks, and platforms for activities. In 2014, they have organized a billboard design competition in schools, whereby the winning billboards will be featured on Pikasso billboards around Beirut. The organization has also developed a variety of promotional items, including car stickers "Ana Ma Bkebb", trash bags, and a storybook, which were distributed for the past three years.

As expected, cleaning the streets involves large amounts of financial, time, and human resources and if this problem is solved, these resources could be channeled towards other important projects in the country (Ojedokun, 2011). It is worthy to note the hard work and constant cleaning achieved by the company Sukleen, whose cleaners work on removing litter and keeping the streets of Beirut clean despite the irresponsible acts of its citizens. The private contractor for waste collection, Sukleen, has made an impressive progress in strengthening its operating efficiency in terms of waste collection and street sweeping (Massoud & El Fadel, 2002).

In addition to being essential to public health and environmental protection (Massoud & El Fadel, 2002), public cleanliness has another important aspect. Lebanon is a country that witnessed civil war and political instability, and keeping it clean is one of the challenges that the government has to tackle, especially that a clean living environment was found to be important in boosting morale and civic pride of the nation and in motivating people to strive for higher standards of living (Tan, 2009, as cited in Ong & Sovacool, 2012).

The present study was motivated by the absence of empirical research on littering behavior and its determinants in the Lebanese context.

CHAPTER IV

AIMS AND HYPOTHESES

The present study focused on identifying the psychological and socio-demographic predictors of littering behavior. More specifically, the study examined littering behavior in the Lebanese context in relation to the injunctive and descriptive norms, sanctions, collective efficacy and environmental self-efficacy. In addition to these variables, socio-demographic variables were examined. Literature review has identified that gender, age, marital status, level of education, and involvement in environmental groups are implicated in littering behavior.

Seven hypotheses were advanced as follows:

Since norms in the form of injunctive norms, descriptive norms and sanctions were shown to have a hindering effect on littering behavior, the following is hypothesized:

H1. Personal norms against littering scores (measuring injunctive norms) will correlate negatively with self-reported littering behavior scores

H2. Livability Quotient scores (measuring descriptive norms) will correlate negatively with self-reported littering behavior scores.

H3. Sanctions scores will correlate negatively with self-reported littering behavior scores

Since the perceived littering (PL) one-item questionnaire is used to assess the validity of the Livability Quotient Scale, it is expected to have a negative correlation with Livability Quotient scores (i.e. Livability Quotient measures the extent to which the environment is clean whereas Perceived Littering measures the perception of participants regarding the number of Lebanese who litter). As such, if participants believe that many Lebanese litter (high Perceived Littering), it should be negatively correlated with their perception of the cleanliness of their environment (low Livability Quotient scores).

H4. Perceived littering scores will correlate negatively with Livability Quotient scores.

Efficacy beliefs in the form of environmental self-efficacy and collective efficacy were found as predictors of pro-environmental behavior. This study is also hypothesizing that efficacy beliefs are related as well to minimizing littering behavior.

H5. Collective Efficacy scores will correlate negatively with self-reported littering behavior scores.

H6. Environmental self-efficacy scores will correlate negatively with self-reported littering behavior scores.

Studies on pro-environmental behaviors in general, and a few studies on littering behavior have shown that age, gender, marital status, educational attainment and involvement in an environmental group might have an effect on such behaviors.

H7. Predictors of this study: Personal Norms Against Littering (measuring injunctive norms), Livability Quotient (measuring descriptive norms), Sanctions, Collective Efficacy and Environmental Self-Efficacy will predict littering behavior after controlling for age, gender, marital status, education and involvement in an environmental group.

CONTRIBUTIONS OF THE STUDY

This study has both theoretical and practical values. Theoretically, it highlights the role of injunctive and descriptive norms, sanctions, environmental self-efficacy, and collective efficacy in influencing people's littering behavior in the Lebanese context. Practically, this may have implications for researchers, organizations, schools, and authorities in developing guidelines for public education, in preventing littering behavior, or in designing and implementing efficient interventions and campaigns that encourage responsible environmental behaviors that help decrease littering behavior. Interventions based on the predictor variables if successful will have economic benefits such as reductions in the time spent on sanitation and cleaning activities and in money and manpower costs associated with serious health and environmental problems (Ojedokun, 2011). Resources freed from these activities could be channeled toward other projects that would enhance the well-being and quality of life of the people (i.e. waste-water management, solid waste management, regular cleaning by local authorities for the beaches, and other necessary environmental projects).

CHAPTER V

METHODOLOGY

A. Research Design & Procedures

In order to test the hypotheses, the current study employed a survey design, whereby a battery of seven questionnaires was administered to the participants in a counterbalanced order to control for order effects. The following were the specific measures used: The Self-Reported Littering Behavior Scale, the Personal Norms against Littering Scale, the Livability

Quotient Scale, the Perceived Littering Questionnaire, the Sanctions Scale, the Environmental Self-Efficacy Scale and the Collective Efficacy Scale. Participants also filled out a socio-demographic sheet to elicit the following information: gender, age, marital status, educational attainment, and involvement in an environmental group.

Participants were informed that the aim of the study was to examine littering behavior and were asked to fill the questionnaires anonymously after consenting to participate. Some participants filled out the survey online through LimeSurvey (N= 127) that was posted on facebook, while others filled out a hard copy of the survey (N=173). Participants were informed about it through snowball sampling or by receiving a hard copy of the survey to be filled out. Locations of the present sample included Beirut, Dora, Bourj Hammoud, Ras Beirut, Jnah, Hadath, Dahieh, Wata el Msaitbeh, Jounieh, Daraya, Adma, Zouk, Bayt el Chaar, Naccash, Sin el Fil, Antelias, Ain Saade, Zalka, Mazraat Yachou, and Saida.

B. Measures Used

The Self-Reported Littering Behavior Scale, the Personal Norms against Littering Scale, the Livability Quotient Scale, the Perceived Littering Questionnaire, the Sanctions Scale, the Environmental Self-Efficacy Scale, and the Collective Efficacy Scale were translated to the Arabic language by two bilingual translators using the back-translation methodology. All scales were factor analyzed and their internal consistency determined prior to hypothesis testing.

1. The Arabic Translation of the Self-Reported Littering Behavior Scale (LBS)

Since there is no specific measure for self-reported littering behavior, a scale was specifically developed for this study. Items related to littering behavior were derived from the Responsible Environmental Behavior Scale (Ojedokun, 2012) and the Littering Behavior

questionnaire that was used in the phone interviews of Keep America Beautiful study (Schultz et al., 2009). The newly constructed questionnaire consisted originally of 29 items; however one item had to be removed after doing the factor analysis (see results section). Respondents were asked how likely they were to drop, leave behind, or throw discards (gum, soda cans or bottles, or paper or food) in various circumstances. The scale was adapted to fit in the Lebanese community. The responses were rated on 5-point rating scale: 1=never to 5=always. The overall self-reported littering behavior was measured by calculating the mean of the rating scores. Higher scores represent more littering behavior (see Appendix A). The scale was factor analyzed and its internal consistency was .82 in the present study.

2. The Arabic translation of the Personal Norms against Littering Scale, PNALS (Cialdini, R.B., Kallgren, C.A., & Reno, R.R, 2000):

A 10-item questionnaire that assesses participants' personal norms against littering. The items measured the individual's perception of personal obligations regarding littering in a variety of settings. Analyses of the 10 items of the scale showed a high internal consistency Cronbach's $\alpha = .90$ in Cialdini et al. (2000) and also a high internal consistency in the present sample ($\alpha = .90$). Individuals' personal norm scores were determined by calculating the mean of the responses over the 10 items. Item ratings range from one to seven, with higher scores indicating a stronger personal obligation not to litter (see Appendix B).

3. The Arabic translation of the Livability Quotient Scale, LQS (Schultz et al., 2009):

The livability Quotient scale used in Keep America Beautiful study (Schultz et al, 2009) was adapted to be used in the present study. The 12-item questionnaire examines the effects of clean and attractive community characteristics on littering behavior. The items reflect a full range of issues including community cleanliness, structural maintenance,

walkability, and landscaping. Items relevant to the Lebanese community were added to the initial questionnaire to assess the extent to which the participants perceive the cleanliness of the beaches, streets, highways and neighborhoods in Lebanon. It was used to determine the saliency of the descriptive norms related to littering in the Lebanese context. Item ratings range from 1 to 5, with higher scores indicating higher livability quotient, and thus higher descriptive norms saliency (see Appendix C). The scale's internal consistency was not previously measured because some of its content was only used as a questionnaire in Keep America Beautiful study, but it had a good internal consistency in the present study ($\alpha = .81$).

4. Perceived Littering, PL:

One adapted item from the European Value Survey*:* (EVS, Torgler et al., 2009): "According to you, how many of the Lebanese citizens throw away litter in a public place?" This item was used to support the validity of the Livability Quotient. The PL uses a 4-point rating scale (1= almost none and 4= almost all). Higher scores indicate higher perceived littering, and thus lower descriptive norms saliency (see appendix D).

5. The Arabic translation of the Sanctions Scale:

Two items were used from the Sanctions questionnaire developed by Grasmick, Bursick & Kinsey (1991). One item measured internal sanctions for littering (guilt or shame feelings), "Generally, in most situations I would feel guilty if I were to litter the highways, streets, or a public recreation area." The second item measured informal sanctions (embarrassment) "Would most of the people whose opinions you value lose respect for you if you were to litter the highways, streets, or a public recreation area?" Respondents were asked to respond by a yes or no to both items (see Appendix E).

6. The Arabic translation of the Environmental Self-Efficacy Scale (Harkness, Scholz & Stadler, 2002)

The scale consists of five items, each item being rated on a 5-point rating scale strongly disagree=1 to Strongly Agree=5. Scores above the mean value reflect high environmental self-efficacy and scores below the mean indicate low environmental self-efficacy (see Appendix F). This scale was found to have high reliability ranging from 0.84 to 0.86 among adults (Harkness et al., 2002; Ojedokun & Balogun, 2011). However, in the present study, it showed an internal consistency of .63

7. The Arabic translation of the Collective Efficacy Scale:

Since there is no specific measure for collective efficacy in the environmental domain, a questionnaire was specifically developed for this study. Items were derived from the Community Collective Efficacy Scale (Carroll et al., 2005), the Collective Efficacy in Schools Scale (Goddard, 2002) and from the 1993 General Social Survey (GSS) as used by Lubell (2002). The questionnaire consisted of 10 items. These include measures of government efficacy, citizen efficacy and community collective efficacy. Each item was rated on a 5 point rating scale strongly disagree=1 to strongly agree=5 (see Appendix G). Scores above the mean value reflected high collective efficacy and scores below the mean reflected low collective efficacy. The items were factor analyzed and had a good internal consistency in the present study ($\alpha = .81$).

C. Pilot Study

A pilot study involving 10 participants between the ages of 18 and 64 was conducted following original IRB approval and prior to the commencement of the main study. Participants in the pilot study were asked to provide feedback regarding the format and content of the measures to be used: Self-Reported Littering Behavior Scale (LBS), Personal

Norms against Littering Scale (PNALS), Livability Quotient Scale (LQS), Perceived Littering (PL), Environmental Self Efficacy Scale (ESE), and Collective Efficacy Scale (CE). Linguistic changes were proposed to item 8 in the Self-Reported Littering Behavior Scale and to item 7 in the Livability Quotient Scale.

CHAPTERVI

RESULTS

A. Sample Characteristics and Demographics

A convenient sample of 300 Lebanese adults between the ages of 18 and 64 participated in the study. 13 participants were dropped from the analyses for statistical reasons (see Section A in results).152 of the participants were females (53%) and 135 were males (47%). The mean age of the participants was 30.64 years old (SD = 11.75). The majority (N=184) of the participants were single (64%), 99 participants were married (35%), and 4 were widowed (1%). The highest percentage of the participants (36%) had a Bachelor's degree (N=102). While 44 participants reported being member of an environmental group, 243 participants (85%) did not report such affiliation. The socio-demographic information of the sample is presented in Table 1

Table 1 Sample Characteristics

Demographics	Categories	N	Percentage
Gender	Male	135	47.0
	Female	152	53.0
Marital status	Single	184	64.1
	Married	99	34.5
	Other	4	1.4
Education	Elementary	31	10.8
	Intermediate	35	12.2
	High school	58	20.2
	Technical	14	4.9
	Bachelor	102	35.5
	Graduate studies	47	16.4
	Membership in environmental groups	Yes 44	15.3
		No 243	84.7

B. Preliminary Analysis

1. Statistical outliers and missing data

Ten participants filled out less than half of the scales and thus were removed from further analyses because of the missing data. Investigation of z-scores revealed that there were no univariate outliers for the independent variables sanctions, livability quotient and environmental self-efficacy. However, one outlier was found in the independent variable collective efficacy, and one outlier in the dependent variable littering behavior, and both outliers were deleted from the data. Also, 5 outliers (cases 82, 92, 93, 113 and 240) with values exceeding an absolute value of 3.29 were found for the independent variable personal norms against littering. Even after excluding the outliers, more than 91.5% of the participants had responses above 4 on a scale from 1 to 7, whereas only 8.5% of the participants had responses of 4 and below. The data on PNALS was extremely negatively skewed.

As it is shown in the z-score of skewness in Table 2, there is a significant negative skew for PNALS. However, all the values of zkurtosis are below the upper threshold of 3.29. Also, as it is advised in Field (2005), in large samples (200 or more) it is more important to look at the shape of the distribution and at the value of skeweness and kurtosis statistics rather than calculate their significance. The shape of the distribution looks normal for all the variables except PNALS. Although PNALS scores were extremely negatively skewed, they were nevertheless kept in the present study because of the variable's theoretical value; however, all the results related to PNALS should be interpreted with caution.

Table 2

Zscores

	Zskewness	Zkurtosis
Self-Reported LBS	1.70	-1.82
PNALS	-7.00	.27
LQS	3.49	1.08
ESE	-1.23	-2.34
CES	-3.90	.69

As for the sanctions variable, the majority of the participants (91%) answered yes for the question that measures internal sanctions "I would feel guilty if I were to litter the highways, streets or a public recreation area", and 77.6% said yes for the question that measures informal sanctions "I would lose the respect of the people I care about if I were to litter in public". Inspection of the histograms indicated that two variables (i.e. PNALS and Sanctions) were severely negatively skewed. The two variables were nevertheless maintained in the main analyses. Observation of the histograms for all the other independent variables (Environmental Self-Efficacy, Collective Efficacy, and Livability Quotient) and the dependent variable (Littering Behavior) showed a normal curve.

The presence of multivariate outliers was also tested using both multivariate outlier screening through Mahalanobis distance and SPSS REGRESSION's internal assessment of outliers. As recommended by Tabachnick and Fidell (2007), a case with a Mahalanobis Distance greater than $\chi 2\ (5) = 20.51$, $p<.001$, is considered to be a multivariate outlier. Three multivariate outliers were detected and deleted. Thus, a total of 287 participants were retained. The socio-demographic characteristics of the final sample are presented in table 1.

C. Psychometric Properties of the Measures

The psychometric properties (factor structure, inter-correlations, internal consistencies and item analysis) were determined for each of the scales: Self-Reported Littering Behavior Scale, Livability Quotient, Collective Efficacy Scale, Environmental Self Efficacy and Personal Norms against Littering. The scales had Cronbach Alpha Coefficients above .7 except for Environmental Self Efficacy. The internal consistencies of the scales are summarized in Table 3.

1. Self-Reported Littering Behavior Scale (LBS)

The Self- Reported Littering Behavior Scale was adapted for use in the present study. The scale was factor analyzed and its internal consistency was determined.

Self-Reported LBS: Statistical Assumptions

Bartlett's Test of Sphericity was significant $\chi 2\ (400) = 2954$, $p < .001$ indicating that the correlation matrix was not an identity matrix and that singularity is not an issue (Field, 2005). Furthermore, Kaiser-Meyer-Olkin for the Self-Reported Littering Behavior Scale showed good sampling adequacy (KMO = .86) indicating that factor analysis may be conducted (Field, 2005; Tabachnick & Fidell, 2007). Measures of sampling adequacy (MSA) found on the anti-image correlation matrices were well above .5, thus indicating that none of the variables needed exclusion from the analysis and that the correlation matrices are factorable (Field, 2005).

Self-Reported LBS: Factor Structure

To examine the factor structure of the Self-Reported Littering Behavior Scale in the current Lebanese sample, factor analysis with principal component extraction method and a direct oblimin rotation was conducted on the 29 items of the scale. Using Kaiser's criterion of

eigenvalues greater than one for factor extraction, seven factors emerged. However, inspection of the scree plot suggested extraction of four factors. As such, factor analysis with principle axis factoring method and direct oblimin rotation was repeated on the 29 items of the Self-Reported Littering Behavior Scale while specifying four factors for extraction. Item number 21 "instructed children not to throw litter on bare ground" didn't load on any of the factors, and was removed from the scale.

The first empirically derived factor comprised 13 items and reflected littering behaviors. The second empirically derived factor consisted of six items and reflected anti-littering behaviors. The third empirically derived factor of the scale that comprised five items reflected environmentally-conscious behaviors, and the fourth empirically derived factor with four items reflected pro-environmental behaviors.

Self-Reported LBS: Internal Consistencies

The 28-items Self-Reported Littering Behavior Scale had an internal consistency of α=.82 in the current Lebanese sample (see table 2). The Internal consistencies of the empirically derived subscales ranged from α = .62 for pro-environmental behaviors and α = .88 for littering behaviors subscale (factor 1 α=.88, factor 2 α=.79, factor 3 α=.67, factor 4 α=.62).

Table 3

Internal Consistencies of the Scales

Scale	Cronbach α
Littering Behavior Scale (LBS)	.82
Livability Quotient Scale (LQS)	.81
Environmental Self Efficacy Scale (ESE)	.63
Collective Efficacy Scale (CE)	.81
Personal Norms Against Littering Scale (PNALS)	.90

Self-Reported LBS: Item Analysis

Analysis of the items reflected the facts related to littering behavior in Lebanon. In the present sample 39% admitted to having seldom (24%), sometimes (9%), often (4%) or always (2%) dropped discards on the streets or at the beach, or on the highway whether there were receptacles available nearby or not. In the present sample, 46% said that they had left behind juice bottles, cups, tissue paper or other discards after attending a lecture or a meeting for the janitors to pick up (17% seldom, 10% sometimes, 7% often and 12% always). 44% of the participants in the present sample admitted leaving behind discards (food remnants, plastic bags, empty cans or bottles, broken toys) in a park, or a picnic area or at the beach (16% seldom, 7% sometimes, 5% often, and 6% always). 68% admitted to having dropped these items in the streets, on the beach or at the highway (29% seldom, 23% sometimes, 10% often and 6% always).

2. Collective Efficacy Scale

CE: Statistical Assumptions

The Collective Efficacy Scale was adapted for use in the present study. Factor analysis with principle component extraction method and direct oblimin rotation was conducted on the 10 items of the Collective Efficacy Scale that was translated into Arabic.

The determinant and Bartlett's Test of Sphericity for Collective Efficacy Scale $\chi 2$ (36) =1154.11 p‹.001 indicated that the correlation matrices are factorable and there are no multicollinearity or singularity problems. KMO for the Collective Efficacy Scale showed a sampling adequacy of (KMO = .799). Item 10 "Citizens in our community don't have the collective skills needed to produce meaningful environmental changes" was deleted because it didn't load well with the other two factors and the measure of sampling adequacy (MSA) found on the anti-image correlation matrices was well below .5 for this item (.365).

CE: Factor Structure

Based on eigenvalues greater than one, using Kaiser's criterion for factor extraction and suppressing coefficients with absolute values below .40, factor analysis revealed two factors. The first empirically derived factor, which consisted of seven items explained 43.93% of the variance and reflected community collective efficacy. The second empirically derived factor that comprised two items reflected government efficacy and explained 19.66% of the variance.

CE: Internal Consistency

The 9-item Collective Efficacy Scale had an internal consistency of .81. The first empirically derived factor (Community Collective Efficacy Subscale) had an internal consistency of .86. The second empirically derived factor (Government Efficacy Subscale) had an internal consistency of .76.

CE: Item Analysis

Item Analysis of the frequencies of the items of the Collective Efficacy Scale revealed that participants had a high Community Collective Efficacy but a very low Government Efficacy. For example, only 7% agreed with the item "I trust the Lebanese government to do the right thing in all matters" and 9% agreed with the item "I believe that the government is

responsive to the public complaints about littering". On the other hand, participants showed that they trust that collectively they can make change happen. 70% believed that "the Lebanese collectively can contribute to decrease littering behavior", 65% believed that "as a community the Lebanese can handle setbacks concerning littering without getting discouraged". 75% were "convinced that the Lebanese can improve the quality of life in the community even when resources are limited or become scarce" and 75% agreed with the item "despite our differences, we can commit ourselves to common community goals".

3. *Livability Quotient Scale (LQS)*

LQS: Statistical Assumptions

The determinant (.033) and Bartlett's Test of Sphericity for Livability Quotient Scale is $\chi 2$ (66) =965.486, p‹.001 indicating that the correlation matrices are factorable and there are no multicollinearity or singularity problems. KMO for the Livability Quotient Scale showed a sampling adequacy of (KMO = .806) and measures of sampling adequacy (MSA) found on the anti-image correlation matrices were all well above .5

LQS: Factor Structure & Internal Consistency

To examine the factor structure of the Livability Quotient Scale, based on eigenvalues greater than one, factor analysis with principle component extraction method and direct oblimin rotation was conducted on the 12 items of the scale. Upon suppressing coefficients with absolute values below .40 and using Kaiser's criterion for factor extraction, factor analysis revealed three factors. The first empirically derived factor consisted of six items and reflected visible pollution. The second empirically derived factor consisted of three items and reflected the general appearance of the community, and the third factor comprised three items and reflected the immediate surrounding environment. The 12 - items Livability Quotient Scale had an internal consistency of.81.

LQS: item analysis

Analysis of the items revealed that participants scored high on the Visible Pollution Subscale (i.e. 82% of the participants described the public beaches as dirty or very dirty, 55% believed that the highways are dirty or very dirty and only 7% believed that their community is not polluted).

4. Environmental Self Efficacy Scale (ESE):

ESE: Statistical Assumptions

The determinant (.57) and Bartlett's Test of Sphericity for Environmental Self Efficacy Scale is $\chi 2$ (10) =156.892, p‹.001 indicated that the correlation matrices are factorable and there are no multicollinearity or singularity problems. KMO for the Environmental Self Efficacy Scale showed a sampling adequacy of (KMO = .732) and measures of sampling adequacy (MSA) found on the anti-image correlation matrices were all above .5

ESE: Factor Analysis and Internal Consistency

Factor analysis with principle component extraction method and direct oblimin rotation was conducted on the 5 items of the Environmental Self Efficacy Scale. When the factors were extracted, based on eigenvalues greater than one, factor analysis revealed one component explaining 41% of the variance. The internal consistency of the whole scale is .63.

ESE: Item Analysis

In the present sample, 21% were neutral and a total of 54% (24% strongly agreed, and 30% agreed) with the item "It is just too difficult for someone like me to do much about the environment". 52% agreed with the item "There is no point in doing what I can for the environment unless others do the same".

60 % of the respondents agreed that “There are more important things than to take care of the environment” with 19% of the respondents as neutral.

5. Personal Norms against Littering Scale (PNALS):

PNALS: Factor Analysis and Internal Consistency

Factor analysis with principle component extraction method and Direct Oblimin rotation was conducted on the 10 items of the Personal Norms against Littering Scale. The determinant (.004) and Bartlett’s Test of Sphericity for Collective Efficacy Scale is $\chi 2$ (45) =1568.095, p‹.001 indicating that the correlation matrices are factorable and there are no multicollinearity or singularity problems. KMO for the PNALS showed a sampling adequacy of (KMO = .901) and measures of sampling adequacy (MSA) found on the anti-image correlation matrices were all well above .5 When the factors were extracted, based on eigenvalues greater than one, factor analysis revealed that the scale is one-dimensional. The 10-items Personal Norms against Littering Scale had an internal consistency of .90.

D. Scale Descriptives

The means and standard deviations of the variables used in the present study are presented in Table 4.

Table 4

Scale Descriptives

	Mean	Std. Deviation
Littering Behavior Scale (LBS)	2.28	.50
Littering Behaviors Subscale (Factor 1)	1.92	.74
Anti-Littering Behaviors Subscale (Factor 2)	3.13	.90
Environmentally-Conscious Behaviors Subscale (Factor 3)	1.83	.73
Pro-environmental Behaviors Subscale (Factor 4)	3.16	1.03
Livability Quotient Scale (LQS)	2.70	.64
Visible Pollution Subscale (Factor 1)	2.27	.76
General Appearance of the Community Subscale (Factor 2)	2.80	.98
Immediate Surrounding Environment Subscale (Factor 3)	3.4	.76
Environmental Self Efficacy Scale (ESE)	3.59	.83
Collective Efficacy Scale (CE)	3.31	.67
Community Collective Efficacy (Factor 1)	3.86	.88
Government Efficacy (Factor 2)	1.81	.97
Personal Norms Against Littering Scale (PNALS)	6.00	.99
Perceived Littering (PL)	3.05	.53

Note: N=279; LBS, LQS, ESE, CE used a 1 to 5 Likert type scale, with 1=strongly disagree and 5=strongly agree , PNALS scored on a 1 to 7 Likert type scale, with 1=strongly disagree and 7=strongly agree. Perceived littering scored on a 1 to 4 Likert type scale 1=none of the Lebanese and 4= all of the Lebanese).

1. Self-Reported Littering Behavior Scale

Self-Reported Littering behavior scores were slightly below the midpoint (M=2.28; SD=.50). The means of the Littering Behaviors subscale (M=1.92, SD=.74) and the Environmentally-Conscious Behaviors subscale (M=1.83, SD=.73) were below the midpoint indicating that people were lower than average on littering as well as on engaging in environmentally-conscious behaviors such as (kept litter in a bag in the car rather than throwing them, do not throw waste unless in a litter bin, enjoyed hiking or walking in nature).

However, the means of the Anti-Littering Behaviors Subscale (M=3.13; SD=.90) and the Pro-environmental Behaviors Subscale (M=3.16, SD=1.03) were slightly above the midpoint demonstrating that participants were slightly more than average in actively engaging in pro-environmental behaviors (such as assisting or financially supporting environmental activities in the neighborhood, recycling or other behaviors that encouraged sustainability or in reporting to the responsible persons any environmental problem) or anti-littering behaviors (such as picking up litters that were not theirs, participated in cleaning the neighborhood, negatively pointing out the behavior of littering).

2. Personal Norms against Littering Scale

Personal Norms against Littering were significantly above the midpoint (M=6, SD=.99) indicating that participants have high obligations towards refusing to litter.

3. Livability Quotient Scale

The mean of the Livability Quotient Scale was slightly below the midpoint indicating that the participants perceive their communities to be moderately clean (M=2.70, SD=.64). However the mean of the Visible Pollution subscale (M=2.27, SD=.76) was slightly below the mean indicating that participants perceived their environment as more than average polluted in terms of littered public beaches, littered highways and air pollution. Participants found their communities to be moderately maintained in the terms of sidewalks and landscaping, since the mean of the General Appearance of the Community subscale was slightly above the mean (M=2.80, SD=.98). Participants expressed the most satisfaction when describing the cleanliness of their immediate surrounding (cleanliness of their work or university environment as well as the cleanliness of the people surrounding them on a daily basis). Thus, the mean of the Immediate Surrounding Environment subscale was higher than average (M= 3.4, SD=.76).

4. Perceived Littering

The Perceived Littering 1-item Scale: "According to you, how many Lebanese citizens litter the roads, beaches or streets?" was used to assess the validity of the Livability Quotient Scale. Responses to this item showed that 74% of the participants said that "the majority of the Lebanese litter" and 16% said that" almost everyone in Lebanon litter".

5. *Environmental Self-Efficacy and Collective Efficacy Scales*

Participants scored above the midpoint on environmental self-efficacy (M=3.59, SD=.83) indicating that participants possessed high self-efficacy beliefs related to their role in maintaining the environment. Also the mean of collective efficacy was above the midpoint (M=3.31, SD=.67) indicating that participants on average believed that collectively, they can make change happen. Above the mean scores for the Community Collective Efficacy Subscale (M=3.86, SD=.88) and the moderately below the mean scores for the Government Efficacy Subscale (M=1.81, SD=.97) showed that participants trust that collectively they can commit themselves to common community goals, but their beliefs towards their government's efficacy was low.

6. Sanctions

As related to the emotional component of norms, the Sanctions Scale revealed that the majority of the participants had high internal sanctions since they responded that they would feel guilty if they were to litter the roads, beaches or public places (91%), and also high informal sanctions because 77% responded that they would lose the respect of the people whom they care about if they were to litter the roads, beaches or public places.

E. Tests of Hypotheses

Pearson's correlations (one tailed) were conducted on the main variables of the study. The correlation matrix shows that of all the predictors, the Personal Norms against Littering scale had the strongest correlation with Littering Behavior. The correlation matrix is summarized in Table 5.

Table 5

Correlation Matrix

Pearson's Correlations between the main variables are displayed in the below table.

	Littering Behavior	Livability Quotient	Perceived Littering	Environmental Self-Efficacy	Collective Efficacy
Livability Quotient	-.02	-			
Perceived Littering	.04	-.08	-		
Environmental Self-Efficacy	-.48**	-.04	-.05	-	
Collective Efficacy	-.40**	.23**	-.09	.29**	-

The Livability Quotient Scale did not significantly correlate with the Littering Behavior Scale but it confirmed hypothesis 2 partially since the correlation between Livability quotient and Littering behavior was negative, but there was not a significant correlation.

The Perceived Littering 1-item Scale: "According to you, how many Lebanese citizens litter the roads, beaches or streets?" was used to assess the validity of the Livability

Quotient Scale. Responses to this item showed that 74% of the participants said that “the majority of the Lebanese litter” and 16% said that" almost everyone in Lebanon litter". Perceived Littering Scale did not correlate significantly with the Livability Quotient Scale, which is inconsistent with hypothesis 4.

Point Biserial Correlation was conducted between the dichotomous Sanctions Scale and Littering Behavior Scale. There was a significant positive correlation ($r=.23$, $p<.01$). This finding is inconsistent with hypothesis 3 which maintained that there will be a negative correlation between Sanctions scores and Self-Reported Littering Behavior Scale scores.

The correlation matrix revealed that environmental self-efficacy had a strong correlation with littering behavior ($r=-.48$, $p‹.01$) followed by collective efficacy with a correlation of $r =-.40$, $p‹.01$, and thus it is likely that efficacy beliefs were a good predictor for littering behavior. The relationship was negative, meaning that as environmental self-efficacy and collective efficacy increased, littering behavior decreased. These findings were consistent with hypotheses 5 and 6.

F. T Tests for Socio-Demographic Variables

1. Independent Samples T-Tests

Due to the large sample, the assumption of normality was based on the histograms (Field, 2005). The assumption of equal variance is assumed for marital status $F (1,280) = 1.15$, $p›.05$. On average, married participants ($M=2.24$, $SE=.04$) littered slightly less than single participants ($M=2.32$, $SE=.03$), but this difference was not significant $t (280) = -.95$, $p›.05$, $r=.11$. The second t-test was carried out to examine whether there are any gender differences in engaging in littering behavior. The assumption of equal variances is assumed for gender $F (1,284) = 1.02$, $p›.05$. Males ($M=2.37$, $SE=.04$) littered more frequently or

tended to report littering more frequently than females (M=2.21, SE=.03). This difference was significant t (284) = -2.54, p‹.05, r=.14.

The assumption of equal variance is met for educational attainment F (284) = 3.49, p›.05. Educational attainment was divided into two groups (group 1 consisted of participants who reached education up till high school and group 2 consisted of participants who reached a university degree, graduate studies or a PhD). The difference in littering behavior rates among individuals who attained high school education (M=2.44, SE=.51) is significantly higher than individuals who reached university level (M=2.18, SE=.46), t (284) = -4.53, p‹.05, r=.25. These results confirm previous findings such as gender differences and educational attainment in relation to littering behavior and reject other hypotheses pertaining to the difference in littering behavior between married or single individuals or younger and older participants.

G. Hierarchical Multiple Regression

A standard multiple regression analysis was performed between self-reported littering behavior as the dependent variable and personal norms against littering, sanctions, livability quotient, environmental self-efficacy and collective efficacy as independent variables. Analysis was performed using SPSS REGRESSION. One IV, personal norms against littering, was extremely negatively skewed and it was not transformed.

1. Statistical assumptions of parametric testing: Regression analyses.

Assumptions of multiple regression were first assessed. With respect to multicollinearity and singularity, when looking at the VIF and tolerance coefficients, all of the VIF values were well below 10, and there were no variables with tolerance levels below 0.1 or 0.2., which confirm that collinearity was not a problem for this model (Field, 2009).

Also, When assessing for multicollinearity by examining the correlations table, it was clear that the largest correlation was at -.59 between personal norms against littering and littering behavior and -.48 between environmental self-efficacy and littering behavior.

The Durbin-Watson statistic was used to test of the assumption of independent errors and it showed a value of 1.82. To assess the assumption of normality, normal P-P plots of regression standardized residuals and standardized residuals' histograms with normal curves were examined. The histogram looked normally distributed, which indicated that the normality of errors assumption was met.

The regression of standardized predicted values over regression of standardized residuals (Zpred/Zresid) used to assess for linearity and homoscedasticity had an oval shape and the points were randomly and evenly dispersed throughout the plot which is indicative of homoscedasticity and of equal variance across the residuals.

2. Regression analyses with the main variables of the study

A multiple regression analysis was conducted to examine the predictors of littering behavior in a sample of Lebanese. The main variables (Personal Norms against Littering, Sanctions, Livability Quotient, Environmental Self-Efficacy and Collective Efficacy) along with the socio-demographic variables (age, gender, educational attainment, membership in an environmental group) were entered using forward method.

Model one included personal norms against littering - which measured the injunctive norms - and accounted for 34% of the variability in Self-Reported Littering Behavior and was found to be a significant fit of the data $F(1, 277) = 146.43$, $p<.001$.

Model two, which included environmental self-efficacy in addition to Personal Norms against Littering accounted for 43% of the variability in Littering Behavior. The change in R^2 was significant for this model, indicating that adding efficacy beliefs to the model improved the model's ability to predict Littering Behavior. The model was also found to predict the littering behavior variable significantly ($F(1,276) = 34.76$, $p<.001$). In addition, the adjusted R^2 in both models tells us how well our model generalizes to the population, and the results showed a very similar percentage between R^2 and adjusted R^2.

Table 6

R, R^2, adjusted R^2, and R^2 change of the Regression Equation

Model	R	R^2	Adjusted R^2	R^2 change	Std. Error of the Estimate
1	.58	.34	.34	.34	.40
2	.64	.41	.41	.07	.38
3	.66	.43	.43	.02	.37
4	.67	.43	.44	.01	.37

Table 7
Regression Parameters

	B	SE B	β
Step 2			
Constant	4.06	.23	
Personal Norms against Littering	-.20***	.02	-.40
Environmental Self-Efficacy	-.17***	.03	-.29
Collective Efficacy	-.11**	.03	-.15
Age	-.00**	.00	-.11

*** $p<.001$; ** $p<.005$

The beta values indicated the individual contribution of each predictor to the outcome. A negative value indicates that the predictor and the littering behavior were negatively related. Observation of b-values revealed that personal norms against littering was found to be the strongest and most significant predictor of littering behavior in the model (B=-.20, t=-7.75, $p<0.001$). Also both environmental self-efficacy and collective efficacy significantly contributed to the model ($t(276) = -5.84$, $p<.001$, $t(275) = -3.18$, $p<.005$ respectively). Therefore hypotheses negatively relating environmental self-efficacy, collective efficacy and personal norms against littering to littering behavior were supported.

One of the hypotheses was that the main variables will predict littering behavior after controlling for age, gender, marital status and educational attainment. Before conducting the regression analyses, the categorical variable educational attainment were divided into two categories (education until high school, education above a university degree) to be entered in the regression model. Results of the multiple regression analysis revealed that the influential variables were excluded from the stepwise forward method except for age and it did not account for much variance.

The regression model predicted the outcome variable significantly ($F(1, 275) = p<.005$). R^2 showed that 43% of the variance in littering behavior was accounted for by the model that included Personal Norms against Littering, Environmental Self-Efficacy and Collective Efficacy with an additional 1% accounted for the age variable. This finding confirmed hypothesis 7.

CHAPTER VII

GENERAL DISCUSSION

Psychosocial aspects of littering behavior have not been given attention in Lebanon; thus, the present study focused on the influence of norms and efficacy beliefs on self-reported littering behavior among Lebanese citizens. Results of the multiple regression analysis showed that taken together, efficacy beliefs (environmental self-efficacy, collective efficacy) and injunctive norms (PNALS) explained 43% of the variance in self-reported littering behavior.

A. Self-Reported Littering Behavior Scale (LBS):

Self-reported LBS showed a four factor structure (Littering Behaviors, Anti-Littering Behaviors, Environmentally-Conscious Behaviors, Pro-Environmental Behaviors) with reliabilities ranging from .62 to .88. The reliability of the total scale was .82.

Whereas self-reported LBS mean scores in the current study indicated that individuals litter less than average, these scores might not have been a true reflection of the environmental situation in Lebanon, because littering from cars and from pedestrians in the streets, public places or beaches in Lebanon is still occurring. Although the mean was not reflective of this reality, a few items in the Self-Reported LBS revealed that a moderate percentage of individuals are littering (i.e. around 40% admitted littering discards on the highway or streets, and 46% leaving discards behind in a classroom or a meeting place for the janitors to pick them up; and 31% admitted throwing litter from the balcony of their house).

In contrast with the mean of the self-reported LBS, these moderate percentages of littering can be explained in terms of the social desirability bias, which might have motivated

respondents to report less littering in general. However, for some items such as cigarette butts and gum, or food remnants (which were considered as organic waste that is not harmful to nature) (Schultz, 2009), a high percentage of individuals (68%) admitted littering these type of discards. This is consistent with previous studies that maintained that cigarette butts, gum, and food remnants are the most commonly observed littered items as well as the most commonly reported littered items (Schultz et al., 2009; Schultz et al., 2013).

Age and educational attainment were considered as significant predictors for self-reported littering behavior (Schultz, 2009) and this was also consistent with the finding of the present study. Moreover, based on the multiple regression analysis, the present study confirmed Wakefield et al.'s (2005) argument that psychosocial predictors play a stronger role than socio-demographic variables in encouraging pro-environmental behaviors.

B. Norms

Norms were measured in terms of injunctive and descriptive norms, and the emotional component of norms (sanctions). The Personal Norms against Littering Scale (PNALS), which measured injunctive norms was reliable in the present study, and showed the same internal consistency as in Cialdini et al. (2000) with $\alpha = .91$. Results of multiple regression have shown that personal norms against littering (injunctive norms) act as a strong predictor of self-reported littering behavior. However, this finding should be interpreted with caution since the PNALS scale was extremely skewed and participants' responses might have been inaccurate due to the self-presentation bias. Thus, one of the possible explanations of this finding is the sensitive nature of the topic, which creates social desirability concerns for the participants and motivates them to report higher obligations against littering and less littering behaviors.

In terms of the relationship between PNALS and Self-Reported Littering Behavior Scale, findings reveal a negative correlation between the two variables. In other words, as obligations towards anti-littering become stronger, participants were more likely to report tendencies to engage in actions that prevent littering and less likely to report littering behaviors. Another possible explanation could be that consistency between attitudes and behavior is a desirable state for individuals (Ojedokun, 2012).

The finding that norms are implicated in environmental behaviors is consistent with Hines et al. (1986, 1987), Stern (2000), and Wakefield et al. (2005) which have acknowledged the importance of norms in determining environmental behavior; and with Cialdini et al (1990, 1991, 2000, 2003) and Schultz et al. (2009) which have focused on the critical role of norms in decreasing littering behavior.

However, the work of Cialidini et al. (1990, 1991) also emphasized the importance of descriptive norms inasmuch as the injunctive norms; and this was not supported in the present study. The Livability Quotient Scale, which measured descriptive norms showed a good reliability (α =.81) with a three factor structure (Visible Pollution, General Appearance of the Community and Immediate Surrounding Environment). Based on the multiple regression analysis, descriptive norms were not found to be a strong predictor. While Cialdini suggested that the dirtier the place the more likely that individuals litter, the opposite was found among the Lebanese sample. Thus, where scores on Livability Quotient Scale dropped indicating increased litter on highways and beaches, participants reported less littering behaviors and more engagement in pro-environmental behaviors (such as participating in cleaning the neighborhood or the beach, or supporting financially environmental activities or engaging in anti-littering behaviors). This is also evident in the work that is done by major non-governmental organizations that are working towards eradicating the problem of littering

especially on the public beaches (i.e. Operation Big Blue Association that works on preventing all kinds of marine pollution). However, it is worthy to note that the presence of litter in the public beaches is not only due to individuals littering, but it is also due to the waste management problem and the mountains of garbage near the shores (EECOY, 2011).

The present study also contradicted Grasmick et al., (1991) and Heywood (2002) who suggested that sanctions are as powerful as legal prohibitions. Sanctions were not shown as significant predictors in the multiple regression analysis, whereas legal punishments were seen as having a prohibitory power in Lebanon. For example, when fines were given for exceeding the speed limits, Lebanese citizens were abiding by the law. The same applies with other laws that were presented in a few years ago (park meters, speeding tickets, seat belts, mechanic payment for the car...). Internal sanctions (guilt and shame) and informal sanctions (loss of respect, or embarrassment) did not have a significant influence on decreasing littering behaviors.

C. Efficacy beliefs

The present study broadened our knowledge of the relationship between efficacy beliefs (environmental self-efficacy and collective efficacy) and self-reported littering behavior. The result that efficacy beliefs (ESE and CE) contributed significantly to the prediction of self-reported littering behavior is consistent with many studies, which held that efficacy beliefs contribute to more pro-environmental behaviors (Chawla & Cushing, 1997; Ojedokun, 2012; Carroll et al., 2005; Stern, 2000; Hungerford & Volk, 1990). This finding is also consistent with the position of Allen and Ferrand (1999) that people with low self-efficacy (i.e. feel helpless, feel that their behavior would not make a difference) are less likely to engage in responsible environmental behavior.

SELF-REPORTED LITTERING BEHAVIOR

The relevance of efficacy beliefs in relation to littering behavior specifically is also emphasized in a recent study by Ojedokun (2012) in which environmental self-efficacy was found to be particularly one of the most potent predictors of littering behavior among other variables. This finding can be explained from the point of view that the "ability" to take pro-environmental action is an important factor in engaging in responsible environmental behavior (Ojedokun, 2012 p.152). In the same line, both environmental self-efficacy and collective efficacy are based on the view that individuals with high efficacy beliefs acknowledge their 'ability' to perform actions (Hungerford & Volk, 1990; Bandura, 1997).

Also Hines et al. (1986) emphasized the critical role of "skill" in motivating people to engage in pro-environmental behavior. Thus, individuals should possess skills to apply their knowledge to solve a given problem. Ojedokun (2012) remarks that when people lack skills or doubt their abilities in a particular activity, they are more likely to consider such activity as a threat, and then lessen their effort to engage in the activity or avoid it altogether. This is also consistent with Bandura (1997) who emphasized that individuals' beliefs about what they can do are important predictors of behavior in general.

Item analyses of the Environmental Self-Efficacy Scale showed that around half of the participants believe that they cannot do anything for the environment unless others do the same (50%). In fact, Lebanon is facing other environmental problems such as air pollution and transportation (Chaaban, Ayoub & Oulabi, 1999), noise pollution (Fooladi, 2011), energy conservation (Chaaban & Rahman, 1998), water shortages, solid waste management (Massoud et al., 2003), electricity, congested traffic (Khalaf, 2012) and no solid solutions have been found yet.

In addition, 60% of the participants agreed with the item "there are more important things than to take care of the environment". This might seem explainable since Lebanese citizens are faced with other challenges such as congested traffic, water and electricity shortages (Khalaf, 2002; Massoud et al., 2003). In addition, the Lebanese citizen witnessed many acts of violence and civil unrest such as random explosions, robbing, car theft, and in this atmosphere, littering seem to be extremely trivial (Khalaf).

Item analyses of the Collective Efficacy Scale showed that individuals had high community collective efficacy scale and a trust that they can as a community handle setbacks as well commit themselves to common community goals and that they can collectively contribute to decrease the littering behavior. On the other hand, participants showed lower government efficacy in terms of trusting the government to do the right things or being responsive to public complaints.

B. Predictors of Littering Behavior

The aim of the study was to examine the extent to which injunctive norms (measured by Personal Norms Against Littering), descriptive norms (measured by the Livability Quotient Scale), and the emotional component of norms (measured by the Sanctions Scale), as well Environmental Self-Efficacy and Collective Efficacy predict self-reported littering behavior in a sample of Lebanese citizens. This study also tested for the effect of socio-demographic variables that were reported in the literature as predictors of littering behavior such as age, gender, educational attainment, marital status, and involvement in environmental groups.

Since the PNALS was skewed and was not excluded from further analysis, the results should be interpreted with caution. In general, the results of this study suggested that among

the predictors in this study, self-reported littering behavior was influenced mostly by the injunctive norms (Personal Norms against Littering) followed by the efficacy beliefs (environmental self-efficacy and collective efficacy). This section discusses the outcome of the hypotheses tested in this study, as well as the interpretation of the findings in light of the relevant literature.

Hypothesis 1 which stated that Personal Norms against Littering (PNALS) would correlate negatively with self-reported littering behavior was supported. PNALS demonstrated a moderate negative correlation with Self-Reported Littering Behavior. This is consistent with the body of research suggesting that injunctive norms are involved in minimizing the observed littering behaviors (Cialdini, Kallgren & Reno, 1991; Schultz et al., 2009).

Hypothesis 2, which stated that the Livability Quotient Scale (measuring descriptive norms) would correlate negatively with self-reported littering behavior, was partially supported: although the correlation was negative, but it was not significant enough to be reported. This is inconsistent with the body of research suggesting that the cleaner the place the more likely it is to be kept clean (Cialdini, Kallgren & Reno, 1991; Schultz et al., 2009). While abundance of litter led to more littering behaviors in previous studies (Cialdini et al. 1990, 1991), the present study showed that the presence of litter on the shores and streets encouraged individuals to pursue more pro-environmental behaviors rather than exhibit more littering behaviors. This finding might be explained by Cialdini's argument that the descriptive norms' influence is critically related to the degree to which the individuals' attention is drawn into the norm and sometimes it can be counteractive. For example, observing anti-social behavior (i.e. littering) might produce less anti-social behavior if it draws the person's attention to the pro-social norm (Krupka & Weber 2009). In this sense,

individuals might have been encouraged to act more pro-environmentally because they are seeing many individuals who are not abiding by the norms, and this in turn is drawing their attention to the pro-social norm of anti-littering.

Consistent with hypothesis 4, Perceived Littering negatively correlated with Livability Quotient Scale but it was not significant enough to report. Initially, Livability Quotient Scale, which measures the extent to which individuals perceive their environments to be clean and maintained, was hypothesized to be negatively correlated with Perceived Littering Scale, which measures the extent to which individuals believe that the Lebanese in general are littering the beaches, roads or streets. In other words, it was assumed that individuals who perceived their environments to be clean (high Livability Quotient) should think that a minority of Lebanese litter (low Perceived Littering) and this was partially supported in this study. However, while looking at the mean of the Livability Quotient Scale, participants scored slightly above the mean, which means that participants perceived their communities to be moderately clean. On the other hand, scores on the Perceived Littering Scale suggested individuals perceived that the "majority of the Lebanese litter". This finding can be due to the fact that even if a lot of individuals are still littering, the streets are actually moderately clean because the major cleaning companies (i.e. Sukleen in Beirut and other NGOs) are making great efforts to maintain the environment clean. A study found that in general, the Lebanese consider the collection method by Sukleen to be satisfactory to excellent (Massoud & El Fadel, 2002).

Hypothesis 3 which stated that sanctions scores will correlate negatively with littering behavior scores was not supported. This finding was inconsistent with Heywood et al (2002), Grasmick & Bursick (1990) and Grasmick, Bursick & Kinsey (1991)

Hypotheses 5 and 6 which state that collective efficacy and environmental self-efficacy scores would correlate negatively with littering behavior scores were supported. Collective efficacy was also positively correlated with environmental self-efficacy and this is consistent with a body of research (Chawla & Cushing, 2007; Chen & Bliese, 2002; Caroll et al., 2005; Wakefield et al., 2005; Lubell, 2002, Stern, 2000). In summary, collective efficacy and environmental self-efficacy correlated negatively with littering behavior; hence, the higher the collective efficacy and environmental self-efficacy, the less likely is that a person engages in littering behavior.

D. Future Directions

The study provided construct validation for the Arabic translation of the PNALS (α=.90). However, the lower than expected reliabilities of some of the subscales of the newly developed measures that were obtained in the current sample call for further refinement of the scales. A suggestion for future research is to construct assessment instruments that are more reliable with shorter questions. Also, the analysis is mainly based on correlations, therefore causality cannot be inferred. Future researchers could conduct experimental studies including observational methods to be able to make inferences regarding causality. Also, a social desirability scale could be introduced in future research as a control measure.

As it is evident, many of the environmental problems are rooted in human behavior; thus, managing the behavior leads to reducing the resulting negative impacts on the environment (Gardner & Stern, 2002). Thus, more factors might have been added to understand the cognitive, motivational and structural factors underlying littering behaviors. For example, future studies can include the availability of receptacles in the littered places, the effects of anti-littering signs, the role of civic education in the schools' curriculum, and parenting effects.

Littering is considered a social problem and whether it is intentional or accidental, it is caused by human behavior (Schultz et al., 2009). Thus, behavioral change is necessary to promote pro-environmental behaviors and decrease littering. According to Skinner (1972), a behavior is shaped and maintained by its consequences and "we must take into account what the environment does to an organism not only before but after it responds" (p.18).

Almost all major problems involve human behavior and they cannot be solved by physical and biological technology alone (Skinner, 1972). To bring about change in behaviors, Geller (2002) suggested four effective ways: (1) select the behaviors to be changed, (2) examine the factors that cause those behaviors, (3) make appropriate interventions to change the targeted behavior and its antecedents, and (4) systematically evaluate the impact of the interventions on the behaviors, their antecedents, and on their effect on the quality of life of the individuals. Based on Geller's and Skinner's recommendation, it might be beneficial to observe and to undergo a study both before and after the appropriate interventions (i.e. structural changes (more trash cans), or educational changes (civic education, emphasis on norms and efficacy beliefs) to understand the factors underlying littering behavior. A behavior which operates upon the environment to produce consequences (operant behavior) can be studied by arranging environment in which specific consequences are contingent upon it (Skinner, 1972). For example, in London, smokers who throw their cigarette butts on the ground have to pay a fine of 50 pounds; and since the law is enforced, one rarely sees anyone throwing cigarettes on the floor (Stoughton, 2013).

In addition, other variables could have been assessed; for example, measure if the participant has collectivist or individualistic perspective and how it affects its environmental self-efficacy and collective efficacy. Moreover, littering can be studied along other behaviors that are also salient in the country such as the reckless driving.

Decreasing littering has obvious aesthetic and health benefits in addition to less soil pollution and water contamination, less congested traffic in winter and less car accidents (LCG, n.d.). Based on the findings of this study about the significant relevance of efficacy beliefs and norms with littering behavior, measures to encourage anti-littering in Lebanon should focus on skill enhancement and on a developing a sense of personal obligation in keeping public places clean. People and organizations starting from the family then broader to include schools, religious organizations, mass media and community youth organizations should work together on strengthening norms (i.e. negative attitudes towards littering) in addition to efficacy beliefs. Schools and parents are particularly important in transmitting these skills and norms to children and adolescents through modeling, practicing the behavior, and through socialization in an adaptive manner. Negative reaction towards littering and empowerment of efficacy beliefs can also achieved through mass media and governmental and non-governmental organizations. Another solution could include the social disapproval of littering by imposing fines on litterers, formulating environmental laws and prosecuting offenders of environmental legislation (Ojedokun, 2012). By decreasing littering, Lebanese citizens will be making their country more attractive to tourists, and by this they will contribute to the growth of Lebanon's economy and enhancement of the citizens' standards of living (Clean Lebanon, 2010).

E. Limitations of the study

While the results of this study provided insight on the effect of efficacy beliefs such as environmental self-efficacy and collective efficacy as well as the importance of the injunctive norms on littering behavior, some limitations should be addressed.

Self-report measures that were used in the present study bring forth self-presentation biases, especially in such a topic pertaining to personal behaviors or cleanliness of the

environment that participants live in. Some of the participants might have distorted the image to make themselves look good because of the social-desirability bias. Moreover, in the survey design, causality cannot be inferred. In such a topic, observational techniques should be added to the self-report measures.

Some of the target variables might not have been assessed using sufficiently sensitive measures. For example, the Personal Norms against Littering Scale (PNALS) had a good reliability (α=.90) but was not suitable for this population since the resulting data was extremely negatively skewed. The same applies for the sanctions scale whereby two items might not have been sufficient to measure the emotional component of norms. In addition, since some of the measures were specifically constructed for this study (Littering Behavior Scale, Collective Efficacy Scale, Livability Quotient Scale), the subscales were not replicated and the results should be interpreted with caution.

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Figure 1a

Histogram of Standardized Residuals

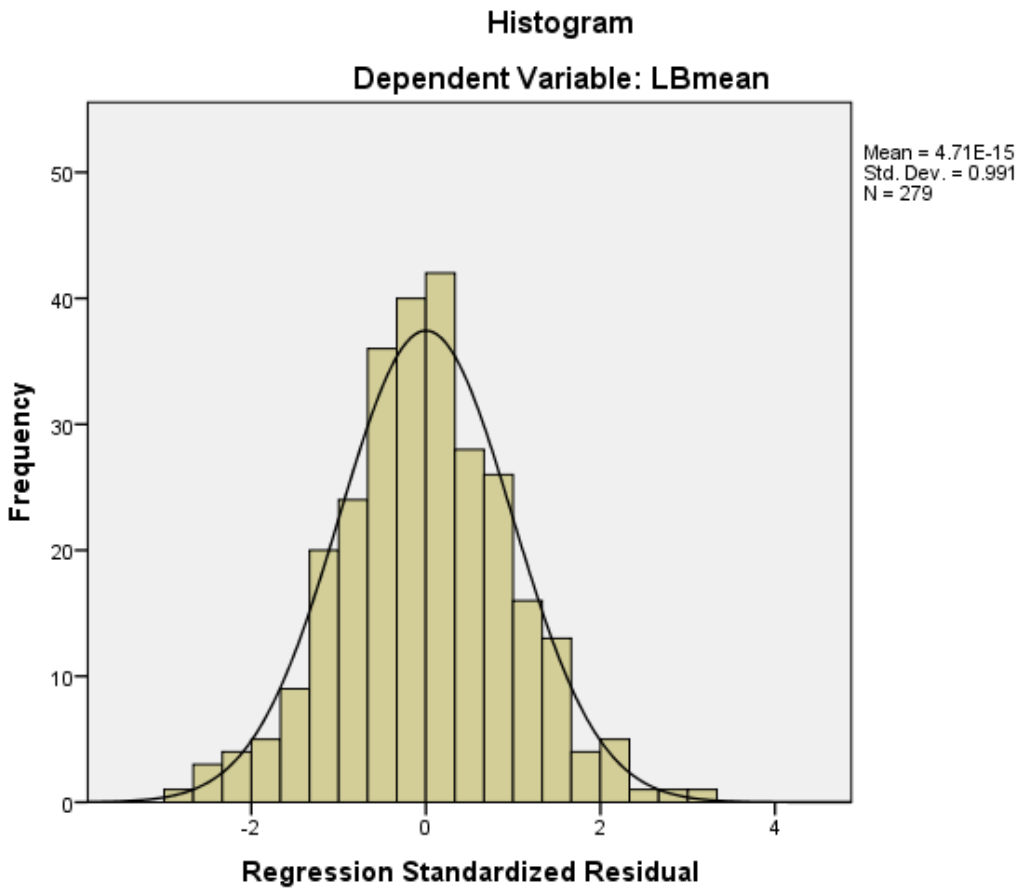


Figure 1b

PP-plot of Normally Distributed Residuals

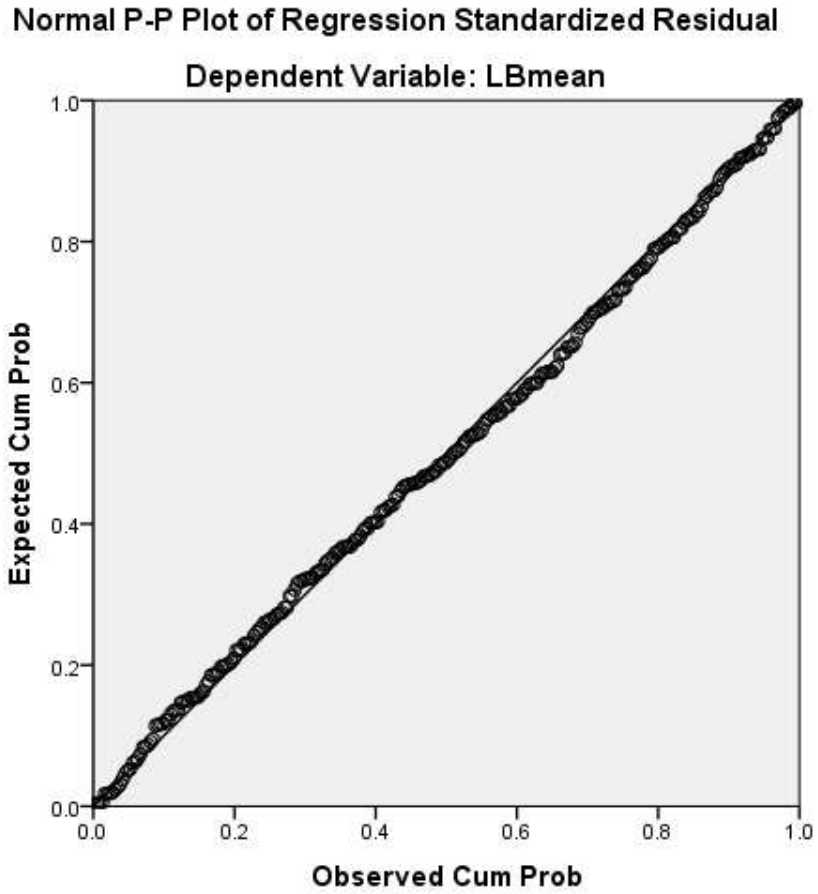
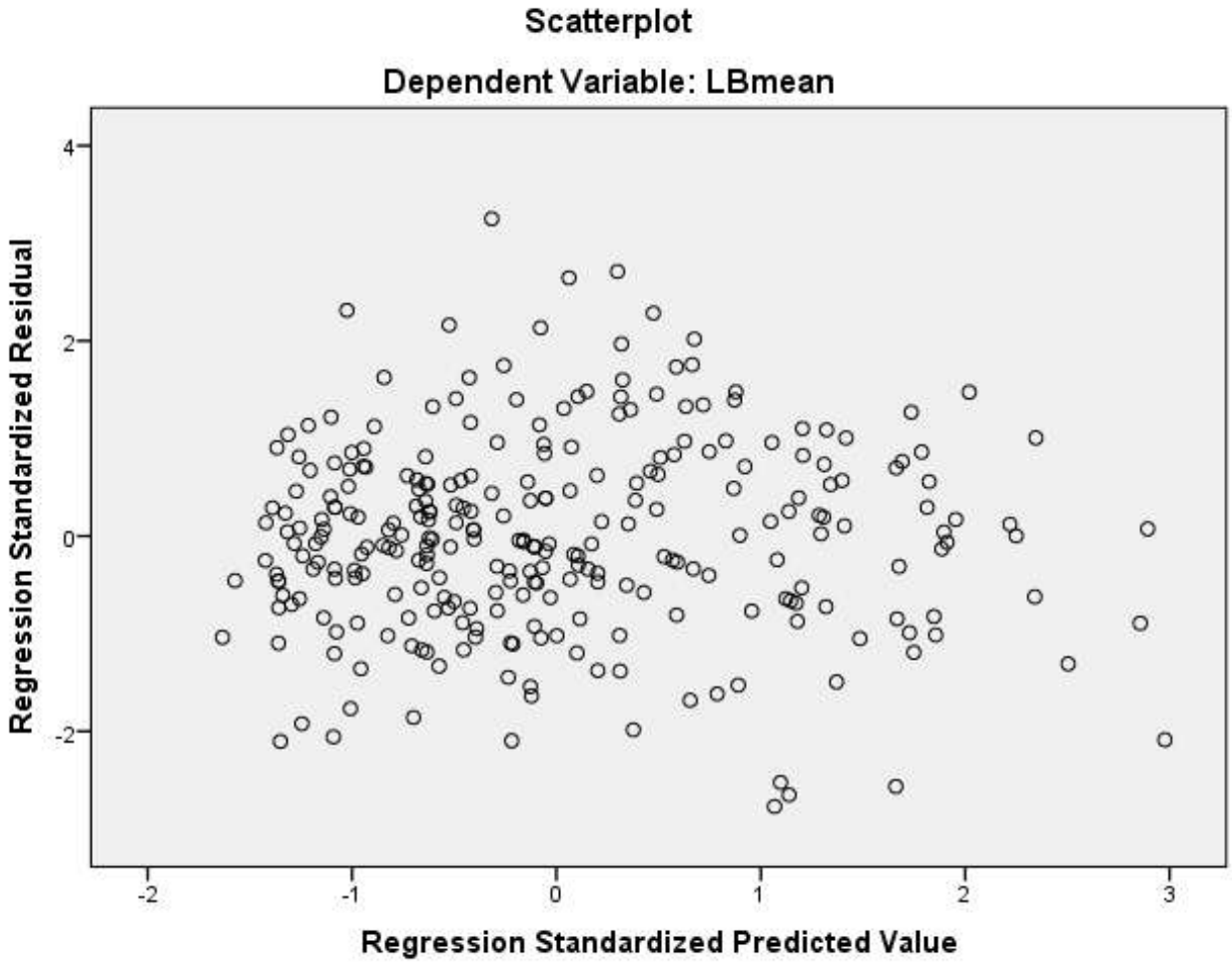


Figure 1c

Scatterplot



Appendix A

Self-Reported LBS

Please read each of the following statements and using the rating scale below, indicate by circling a number the extent to which you engaged in the behavior in the **past year.**

Rating Scale

Never = 1; Seldom = 2; sometimes = 3; often = 4; and always =5

1. When I had litters to discard, I waited until I saw a litter bin to put them into

   1 2 3 4 5

2. Dropped discards on the sidewalk or highway or at the beach regardless if there were any available receptacles or not

   1 2 3 4 5

3. Dropped discards on the sidewalk, the highway or at the beach only when there were no receptacles available nearby

   1 2 3 4 5

4. I had difficulty throwing any type of discards on bare ground (even if it was only gum or food remnants)

   1 2 3 4 5

5. I might have dropped only gum or cigarette butts or food remnants on the highway, street or at the beach

   1 2 3 4 5

6. When I had wastes to discard in a car, I kept them in a bag rather than throwing them on the road

1 2 3 4 5

7. Left behind popcorn, empty soda cans, empty juice bottles or the tickets, for the janitor to pick them up after attending a concert or watching a movie at the cinema

1 2 3 4 5

8. When I finished drinking water, I kept the bottle in my hand until I saw a litter bin to discard it into

1 2 3 4 5

9. Left behind juice bottles, cups, chocolate wrappers, tissue paper or other discards after attending a lecture or a meeting for the janitors to pick up

1 2 3 4 5

10. Whenever I saw someone who was throwing litter on the ground, I pointed out his/her unfriendly environmental action

1 2 3 4 5

11. Threw away trash that I have collected in the car into a place that is full of litter

1 2 3 4 5

12. Instructed people who threw litters on bare ground to pick up the litters and put them into a litter bin

1 2 3 4 5

SELF-REPORTED LITTERING BEHAVIOR

13. Threw away discards from the car in a parking lot, on the highway or in a street <u>when no one was around</u>

1 2 3 4 5

14. Threw away flyers distributed on the street immediately after receiving it

1 2 3 4 5

15. Participated in cleaning the neighborhood, classroom, or the beach

1 2 3 4 5

16. Threw away discards in a place where it is was clearly written “do not throw waste”

1 2 3 4 5

17. Picked up litter that is was not mine

1 2 3 4 5

18. Left behind discards (i.e. food remnants, plastic bags, empty cans or bottles, broken toys…) in parks or a picnic area or at the beach

1 2 3 4 5

19. Pointed out the behavior of littering to my friends whenever I saw one on a highway, park, or at the beach

1 2 3 4 5

20. Left behind damaged rubber mattresses, suntan lotion, plastic bags or other things on the beach

1 2 3 4 5

21. Instructed children not to throw litter on bare ground

1 2 3 4 5

SELF-REPORTED LITTERING BEHAVIOR

22. Threw away trash that I had collected in the car in a place full of litter, knowing that this place is regularly cleaned by janitors

1 2 3 4 5

23. Assisted in or financially supported tree and flower planting or other environmental activities in the neighborhood

1 2 3 4 5

24. Dropped food remnants (i.e. apples and banana) or chocolate wrappers or other discards from the balcony of my house

1 2 3 4 5

25. Told a friend to pick up the litter he/she left behind

1 2 3 4 5

26. Left behind toilet paper that fell unintentionally on the ground after using the toilet at a restaurant

1 2 3 4 5

27. Supported recycling and other pro-environmental behaviors that encouraged sustainability (i.e. collected plastic bottle caps, or paper; or turned off the light, didn't let the water run after finishing from using it)

1 2 3 4 5

28. Reported to the responsible persons or to the municipality any environmental problem that is present at the university/workplace or in the building where I live

1 2 3 4 5

29. Enjoyed hiking or walking in nature

1 2 3 4 5

Appendix B

PNALS

For each of the following questions, please choose the answer that best describes your personal obligations:

1. Do you feel a personal obligation to not litter when you are holding an empty soft drink can and there are no trash cans available?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

2. Do you feel a personal obligation to not litter when you are holding a gum wrapper and there are no trash cans available?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

3. Do you feel a personal obligation to stop and pick up a piece of scrap paper that you accidentally drop because you are in a hurry?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

4. Do you feel a personal obligation to stop and pick up a piece of scrap paper that blows off a big stack of papers that you are carrying in both arms?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

5. Do you feel a personal obligation to not litter when you are ill (fever, headache, muscle ache) and you would have to walk out of your way to reach a trash receptacle?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

SELF-REPORTED LITTERING BEHAVIOR

6. Do you feel a personal obligation to not litter when you are preoccupied with important things on your mind?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

7. Do you feel a personal obligation to pick up a piece of paper you dropped when it is raining and you are getting soaked?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

8. Do you feel a personal obligation to not litter when it is dark outside and nobody could have seen if you littered?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

9. Do you feel a personal obligation to not litter even though you know a litter pickup crew will be coming to the area soon?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

10. In general, do you feel a personal obligation to not litter?

No personal obligation 1...2 ...3...4…5...6... 7 Very strong personal obligation

Appendix C

LQS

For each of the following questions, please choose the answer that best describes the physical environment in your community

1. How much litter is visible in your neighborhood (close to your home)?

A lot of visible litter 1 2 3 4 5 virtually no visible litter

2. How much litter is visible in your University / School / or work environment?

A lot of visible litter 1 2 3 4 5 virtually no visible litter

3. Are the streets and sidewalks in your community well maintained for pedestrians? (Not necessarily your specific neighborhood or area in front of your home)

Not at all well maintained 1 2 3 4 5 very well maintained

4. How would you describe the landscaping in your neighborhood in terms of the number of flowers, plants and trees?

No flowers, plants, and trees 1 2 3 4 5 a lot of flowers, plants and trees

5. How would you describe the attractiveness of the flowers, plants and trees in your community?

They are very unattractive 1 2 3 4 5 they are very attractive

6. How would you describe the conditions of things like, benches, street signs, and street lights in your community?

Very bad 1 2 3 4 5 very well

SELF-REPORTED LITTERING BEHAVIOR

7. How would you describe the cleanliness of public beaches in Lebanon?

Not at all clean 1 2 3 4 5 very clean

8. How would you describe the cleanliness of the highways in Lebanon?

Not at all clean 1 2 3 4 5 very clean

9. How would you describe the cleanliness of people surrounding you at school/University/or work environments?

Not at all clean 1 2 3 4 5 very clean

10. Do you smell odors of garbage coming from nearby dumpsites?

All the time 1 2 3 4 5 not at all

11. In your opinion is your community polluted?

Very polluted 1 2 3 4 5 not at all polluted

12. How clean is the air you breathe in your neighborhood?

Not at all clean 1 2 3 4 5 very clean

Appendix D

PL

According to you, how many of the Lebanese citizens throw away litter in a public place?

Almost none 1 …. 2 …. 3…. 4…. almost all

Appendix E

S scale

Please answer by yes or no for each of the following statements:

1. Generally, in most situations I would feel guilty if I were to litter the highways, streets, or a public recreation area

Yes

No

2. Would most of the people whose opinions you value lose respect for you if you were to litter the highways, streets, or a public recreation area?

Yes

No

Appendix F

ESE

For each of the following questions, specify how much you agree or disagree with each of these statements using this code:

1 = strongly agree, 2 = agree, 3= neither agree nor disagree; 4=disagree; 5=strongly disagree

1. It is just too difficult for someone like me to do much about the environment

Strongly agree 1 2 3 4 5 strongly disagree

2. I do what is right for the environment, even when it costs more money or takes more time

Strongly agree 1 2 3 4 5 strongly disagree

3. There are more important things to do in life than protect the environment

Strongly agree 1 2 3 4 5 strongly disagree

4. There is no point in doing what I can for the environment unless others do the same

Strongly agree 1 2 3 4 5 strongly disagree

5. Many of the claims about environmental threats are exaggerated

Strongly agree 1 2 3 4 5 strongly disagree

Appendix G

CE

For each of the following questions, specify how much you agree or disagree with each of these statements using this code:

1 = strongly agree, 2 = agree, 3= neither agree nor disagree; 4=disagree; 5=strongly disagree

1. In general, I trust the Lebanese government to do the right thing in all matters
   Strongly agree 1 2 3 4 5 strongly disagree

2. I trust the Lebanese government to do right concerning environmental problems
   Strongly agree 1 2 3 4 5 strongly disagree

3. I believe that the government is responsive to the public complaints about littering problems
   Strongly agree 1 2 3 4 5 strongly disagree

4. I believe that the government is capable of finding solutions to the littering problem
   Strongly agree 1 2 3 4 5 strongly disagree

5. I believe that Lebanese collectively can contribute to decrease littering behavior
   Strongly agree 1 2 3 4 5 strongly disagree

6. As a community we can handle setbacks concerning littering without getting discouraged
   Strongly agree 1 2 3 4 5 strongly disagree

7. Despite our differences, we can commit ourselves to common community goals
   Strongly agree 1 2 3 4 5 strongly disagree

SELF-REPORTED LITTERING BEHAVIOR

8. I am convinced that we can improve the quality of life in the community, even when resources are limited or become scarce

   Strongly agree 1 2 3 4 5 strongly disagree

9. Despite a growing population, our community can preserve parklands in Lebanon

   Strongly agree 1 2 3 4 5 strongly disagree

10. Citizens in our community don't have the collective skills needed to produce meaningful environmental changes

    Strongly agree 1 2 3 4 5 strongly disagree

Appendix H

Demographic Information

1. Gender

- Female
- Male

2. Age: ……. In years

4. Marital status

- Single
- Married
- Other (Please specify) --------

5. Educational Level:

- Elementary
- Intermediate
- High School
- University
- Graduate Studies
- Technical

6. Location: ----------

7. Member of any group whose main aim is to protect or preserve the environment:

- Yes
- No