

Self-Monitoring and Responsible Environmental Behaviour: the Mediating Role of Attitude towards Littering

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Abstract- The purpose of this study was to investigate the mediatory role of attitude towards littering in the relationship between self-monitoring and responsible environmental behaviour among a sample of residents of Ibadan city, Oyo State, Nigeria. A cross-sectional survey was conducted to collect data from 1,360 participants using measures of self-monitoring, attitude towards littering and responsible environmental behaviour. Findings of the research are that there is a negative influence of self-monitoring on attitude towards littering, but no significant influence on responsible environmental behaviour; in addition, attitude towards littering had a negative influence on responsible environmental behaviour. Lastly, attitude towards littering can reinforce the part of influence of self-monitoring on individual responsible environmental behaviour. According to the findings, stakeholders in the urban environmental management should emphasize attitudinal change through cognitive intervention to encourage responsible environmental behaviour.

Keywords- Responsible Environmental Behaviour; Self-monitoring; Attitude towards Littering; Ibadan Metropolis; Nigeria

I. INTRODUCTION

Population growth and rapid urbanization aggravate waste generation in cities, hence the increasing concern about the implications of environmental pollution problems such as littering for health, social, economic, and aesthetic related issues of urban environments. This concern is promoting research on factors related to littering. Thus, analysing the psychosocial predictors of taking personal conscious action that prevent littering, refers to in this paper as responsible environmental behaviour among city dwellers is therefore of great public health interest. This is because there is little or no controversy in the research literature that littering is a behavioural problem, if it is so, then understanding its motivators and possible mediators could assist in the development of sustainable prevention strategies acceptable to individuals. This is also important because resources are becoming scarce, making responsible environmental behaviour not only sensible practice but essential for healthy and liveable cities. Responsible environmental behaviour is an environmental psychology construct that covers different preventive measures by individual towards the physical environment [1, 2]. No littering is an aspect of responsible environmental behaviour [3].

In Nigeria, there is a high and increasing prevalence of urban environmental pollution through littering in most

urban centres and cities. But the problem appears substantial and is increasing very fast in Ibadan, the capital city of Oyo state, despite government efforts to tackle the problem (e.g., creating awareness through television and radio jingles, environmental planning, provision of trucks for wastes collection and disposal, kerbsides sweeping, enactment of law to prevent littering and dumping along drainage channels and river courses, and budgetary investment of ₦ 4.5 billion naira about USD 2.84 billion dollars by both the Federal Government of Nigeria and Oyo State Government to evacuate solid waste from the nooks and crannies of Ibadan city by a private consortium from the United States [4, 5]. No wonder, the city was labelled as the dirtiest city in Nigeria by a former Minister for environment, housing, and urban development [6]. Hence, the motivation to investigate the mediatory role of attitude towards littering in the relationship between self-monitoring and responsible environmental behaviour among residents of Ibadan city was set in motion. Understanding the relative contribution of self-monitoring to responsible environmental behaviour and the mediatory role of attitude towards littering in the relationship between the two is important to assist policy-makers in designing appropriately targeted public littering preventive interventions.

According to Geller (1973) [7], litter (e.g., packaging items, soft drink bottles, other bottles, glass, pure water nylons, fabric, chip and confectionary wrappers, metal cans, plastic straws, bottle caps, small pieces of papers, newspapers or magazines, vegetable waste and food scraps, household wastes, cigarette butts, milk tins, sweet or crisp wrapper, piece of chewing gum, etc.) consists of items found in socially unacceptable locations. Littering is then defined as individuals' intentional or unintentional act of throwing of waste on bare ground in general daily practice.

Littering is a social, health, economic, aesthetic, and environmental pollution problem that cities around the world face [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]. It poses a serious threat to human health and wellbeing through exposure to infection and biological contaminants, odour nuisance, and an increased number of vermin (rodents and insects) which breed and act as disease vectors. In some places, litter is an eyesore. Similarly, throwing litter on bare ground increases the time, money, and human resources that government, community, and individuals have to spend on environmental sanitation and cleanup activities.

The explanations of why individuals litter vary, but a

study of litterers in public locations in the USA found that younger people littered more than older people, males more than females, that proximity of a trashcan was associated with a reduction in littering rates, and that previous presence of litter in the environment was associated with an increase in littering rates^[19]. In a related report prepared for Keep America Beautiful, 43% of participants admitted to littering in the past month, and their analysis showed that reluctance to litter in hypothetical situations was associated with lower rates of self-reported littering behaviour^[15]. Attractive community appearance (i.e., cleanliness of streets and sidewalks, low rates of visible litter, pleasing landscaping and infrastructure) was also associated with lower rates of self-reported littering^[15]. In Palestinian territory, findings^[13, 14, 16] have also demonstrated that moral and religious conviction, marital status, income, gender, education level, age, and type of residence are correlated with littering and participant's support of potential prevention strategies. Al-Khatib (2009)^[13] also reported that participants in his study cited dirtiness of streets and insufficient availability of garbage bins (or other disposal options) as the main cause of littering.

Researchers have also linked personality variables to littering. These personality variables include altruism, locus of control (Ojedokun, 2011),^[9] such that those who care about others or believe they can affect their environment are more likely to demonstrate responsible environmental behaviours. Ojedokun and Balogun (2011)^[11] reported that self-efficacy and self-concept, are related to littering. A meta-analysis by Hines et al. (1986-87)^[19] also implicated locus of control and personal responsibility on responsible environmental behaviour. Similarly, studies (e.g.^{20, 21, 22}) have shown association between locus of control and REB.

Studies have also focused on specific human and situational factors which might promote or inhibit interest, motivation, and actual participation in actions that prevent littering. Such factors include age, gender, proximity of a trashcan, previous presence of litter in the environment^[23], moral and religious conviction, marital status, income, education level, type of residence^[13, 14, 16]. Essentially, therefore, knowledge of the influence of both situational and personality factors on pro-environmental actions may help in understanding, predicting, and designing interventions to enhance relevant environmental behaviour. However, not much is known, about the mediatory role of attitude towards littering in the relationship between self-monitoring and responsible environmental behaviour.

A mediator is part of a casual chain that is affected by a prior variable and in turn affects a subsequent variable^[24]. In other words, mediators are variables that transmit effects to other variables^[25]. To Baron and Kenny (1986)^[26], a variable functions as mediator when its inclusion in an analysis results in a significant reduction in the relationship between the independent and outcome variable. The role of attitude as a mediator in the relationship between psychosituational factors and responsible environmental behaviour has been suggested by Hines, Hungerford, and Tomera (1986-1987)^[19], but not tested. Attitude towards littering was selected as a mediator because information about people's attitude assists behaviour modification across

multitude of situations^[27, 28]. Though this argument sounds logical, data on the mediating role of attitude towards littering in the relationship between self-monitoring and responsible environmental behaviour are scarce in literature. Self-monitoring is the extent to which information about the environment is used by people to modify their own behaviour^[29]. Consequently, this study attempts to address this void in the literature by focusing on self-monitoring as the predictor variable, attitude towards littering as the mediator, and responsible environmental behaviour as the criterion variable. The overarching questions guiding this research are: (a) how strong is the relationship among responsible environmental behaviour, attitude towards littering, and self-monitoring; (b) what role does attitude towards littering play in the relationship between self-monitoring and responsible environmental behaviour?

II. CONCEPTUAL MODEL

The study is conceptualized to indicate relationships between self-monitoring, attitude towards littering, and responsible environmental behaviour. Fig. 1 depicts the links contained in the conceptualized model. Self-monitoring is hypothesized to directly influence attitude towards littering and responsible environmental behaviour, respectively, and attitude towards littering in turn, is hypothesized to mediate the relationship between self-monitoring and responsible environmental behaviour.

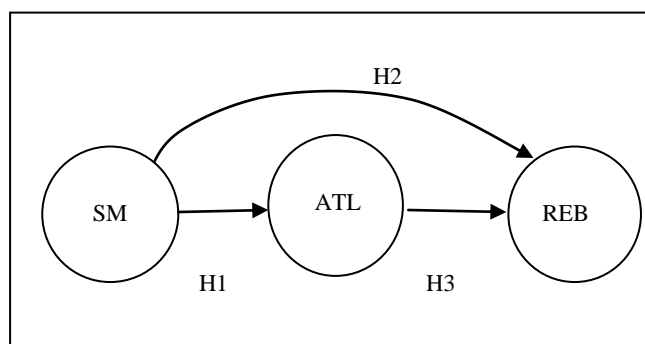


Fig. 1 Conceptual Model and Hypotheses

Key: SM =self-monitoring, ATL = attitude towards littering, REB = responsible environmental behaviour

A. Self-Monitoring and Responsible Environmental Behaviour

People may have different types of attitudes, behaviours, experiences, cognitions, emotions, and motivations due to the extent to which they can and do monitor their self-presentation, expressive behaviour, and non-verbal affective display. This individual difference is labelled self-monitoring. Koestner, Bernieri, and Zuckerman (1992)^[30] describe it as the relative tendency of individuals to regulate the appropriateness of their own behaviour on the basis of external events; such as the reactions of others, environmental cues, or social norms (high self monitoring) or on the basis of internal factors such as their own beliefs, attitudes, and interests (low self monitoring). Individuals who rely primarily on environmental cues to guide their behaviour are considered as high self-monitors; conversely individuals who rely primarily on information about their

inner states are described as low self-monitors. Due to difference in the levels of self-monitoring, individuals described as high and low self-monitors may exhibit different littering preventive actions and attitudes toward littering. If this is so, then high self-monitors due to their sensitivity to situational norms compared to low self-monitors are expected to report themselves as taking actions to prevent littering to align their expressive behaviour with the behaviour setting norm. However, logical as this argument appears, self-monitoring is rarely examined as an antecedent of responsible environmental behaviour. This justifies the inclusion of self-monitoring as a predictor variable in the present study.

B. Attitude Towards Littering and Responsible Environmental Behaviour

According to Adams (2003) ^[31], one of the ways of understanding human behaviour is through understanding their attitudes. To Eagly and Chaiken (1993) ^[32], attitudes are psychological tendencies expressed in evaluating a particular entity (for example littering) with some degree of favour and disfavour. This evaluative response may be expressed as a cognitive tendency (thoughts and ideas about littering), as an affective tendency (positive or negative feelings towards littering), as a behavioural tendency (action towards littering), or a combination of any of these psychological tendencies. Attitude towards littering refers to a psychological tendency to evaluate or react with a certain degree of favour or disfavour towards throwing litter on bare ground. The attitude-behaviour link model of Ajzen and Fishbein (2005) ^[33] contends that though, not in every situation, attitude simplifies prediction and control of behaviour. For instance, individuals who think, feel, and act negatively towards littering are less likely to throw waste on bare ground. Individual attitude towards littering is predictive of responsible environmental behaviour ^[9]. Hence, attitude towards littering is expected to have negative relationship with responsible environmental behaviour.

C. The Role of Attitude Towards Littering in the Relationship Between Self-Monitoring and Responsible Environmental Behaviour

Attitude towards littering may mediate the relationship between self-monitoring and responsible environmental behaviour, simply because some internal (psychological) resources such as self-monitoring are unique and consistent features of the individuals that are not readily amenable to manipulation in order to achieve behaviour modification. Their influences may even contaminate any intervention attempts. Thus, something amenable to manipulation is needed to strengthen the relationship between desired psychological factors and behaviour, as proposed in this study. For an example, if high self-monitors observe social cues such as anti-littering norms, and use them as guides for appropriate environmental behaviour, they are more likely to take actions to prevent littering, whereas taking actions to prevent littering may be low among low self-monitors because they are less susceptible to the influence of social cues. In other words, individual stable dispositions may inhibit adaptive responses, hence, the need to intervene on

their cognition to invoke negative reactions toward littering. Literature on how attitude towards littering mediates the relationship between self-monitoring and responsible environmental behaviour is sparse.

D. Study Hypothesis

Based on the conceptual model and literature reviewed, it is hypothesized that: Attitude towards littering will mediate the relationship between self-monitoring and responsible environmental behaviour.

III. METHOD

A. Research Design

The study adopted a cross-sectional survey design to gather data on the independent, the mediator, and the dependent variables, respectively. The independent variable is self-monitoring. The mediator is attitude toward littering while the dependent variable is responsible environmental behaviour.

B. Setting

Ibadan city, the capital of Oyo State is an urban centre located in the humid Southwest of Nigeria. It is on a major transport route to the northern parts of Nigeria, and is the largest of contemporary traditional Yoruba towns. Ibadan is composed of the main city and its suburbs. Administratively, Ibadan metropolis used to be under one local government; the Ibadan Municipal Government, before it was split into five distinct local government areas (LGA) in 1991. The five LGAs are Northeast, North Central, Northwest Southeast, and Southwest. The 1,338,659 inhabitants of the main city according to census results of 2006 represent 24.34 percent of Oyo State. The data for this study were collected from the residents of Ibadan North-east and South-east local government areas. These areas are considered as core and transitory areas of Ibadan ^[34]. Justifications for selecting them include, residents of these areas are from a wide spectrum of social and economic status, the areas comprise of both inner core (indigenous or high density communities) and transitory communities (developed with little or no space for further development). Their choice ensures identical environment for all the participants.

C. Participants

The study population for this research consisted of residents from two Local Government Areas in Ibadan. Inclusion criteria for participating in the study were adult age, resident or met at the study sites, physically and cognitively able to respond to a survey. One thousand, three hundred and sixty ($n = 1,360$) residents of Ibadan participated in the study. Their ages ranged from 18 to 65 years (Mean = 32.36, Sd = 10.98). In terms of gender, 770 of the respondents were males (56.6%) and 590 were females (43.4%). In terms of marital status, 44.0% of the respondents were married, 49.1% were single, 2.4% were separated, and 2.2% were widowed. About 38.5% had secondary school education, 19.7% had polytechnic or college of education certificates, 16.5% had primary school education, 16.4% had teacher training education, 6.5% had bachelor degree or its

equivalent, and 2.5% had postgraduate qualifications. In terms of their occupation, 24.5% were government employees, 4.9% were with private employers, 9.0% were artisans, 25.2% were traders, 6.3% were self employed, 0.4% were clergies, 0.8% were retirees, 26.3% were students, and 2.7% were unemployed. Most of them (49.4%) were tenants, 18.4% were landlords, and the remaining 32.2% were staying with parents or relatives. This description shows that participants in this study cut across different socio-economic status, thus their responses might reflect opinions of most people about the issue in question. This implies that the diverse background of the participants could be a good platform to transport attitude change and behaviour modification measures to different targeted audience.

D. Measures

The measuring battery for data collection consists of self-monitoring, attitude towards littering, and littering behaviour. Measures of some demographic information were also included. Because some respondents cannot read English language, the battery of tests was composed in two languages (English and Yoruba). The questionnaire was first composed in English and then translated into Yoruba and back-translated into English using two linguistic experts who checked for equivalence. In order to cross-check, the questionnaire was sent to two additional Yoruba native speakers and their corrections and suggestions were compared and implemented. All respondents were given a choice of completing the English or Yoruba version of the questionnaire.

Socio-demographic characteristics measure are gender as a dummy variable (1 = male, 2 = female). Age is measured in number of years. Education is the category of level of education achieved such as West African School Certificate (WAEC)/Senior Secondary School Certificate (SSCE), Ordinary National Diploma (OND)/National Certificate in Education (NCE), First Degree/ Higher National Diploma (HND), and Postgraduate certificate. Marital status measured as single, married, divorced, separated, and widowed.

Self-monitoring. The Self-monitoring scale comprised of 13 items developed by Lennox and Wolfe (1984) ^[35]. Participants indicate their level of self-monitoring on a 5-point Likert format ranging from “strongly agree = 5” to “strongly disagree = 1” for positive statement and vice-versa, so that high score above the mean value on the scale indicates high self-monitoring, and low score below the mean value indicates low self-monitoring. Lennox and Wolfe (1984) ^[32] reported a Kuder-Richardson 20 reliability of .70, and a test-retest reliability of .83 (df = 51, $p < .001$ one month interval). Balogun and Ojedokun (2005) ^[36] reported an alpha of .91 for the scale.

Attitude towards littering. Attitude towards littering was measured on a scale of 24 to 120, with the scores of participants in this study ranging from 37 to 113. The scale is a 24 item self-reported questionnaire based on the three components of attitude cognition, affection, and conative. The scale is rated on a 5-point scale ranging from “strongly

agree = 5” to “strongly disagree = 1”, so that high score above the mean value represents negative attitude towards littering, and low score below the mean value indicates positive attitude towards littering. Evidence for the construct validity of the scale is presented elsewhere (see [10]).

Responsible environmental behaviour. Responsible environmental behaviour was tapped on a scale of 44 to 176. The items on the scale measure habitual characteristics or conscious actions on the part of individuals to intentional or unintentional throw litter on bare ground in every day practice. It is a self-report questionnaire with response pattern in 4-point scale ranging from “Never = 1 to Always = 4”, so that high score above the mean value represents less tendencies to take littering prevention actions, and low score below the mean value indicates more tendencies to take littering prevention actions. Evidence for the construct validity of the scale is presented elsewhere (see [10]).

E. Procedure

Data for this research were collected as part of a larger study of environmental pollution problem. A multistage sampling technique is adopted for data collection in the study. First, two local government areas were purposely selected for data collection. Secondly, core and transitory areas were identified according to the recommendation of Mabogunje (1963) ^[37]. Using the Nigeria National Population Commission's list of communities, thirty-two (n=32) communities within Ibadan North-East, and another twenty-nine (n=29) communities within Ibadan South-East were identified. After the identification of these communities, simple random technique (selecting communities that fall on the odd numbers) was used to select, at least, fifty percent (50%) of the communities from each local government area. A proportional technique was used to allot questionnaires to the selected communities. Lastly, a total of two thousand (2,000) self-report survey packets that consist of a cover letter from the researcher and a questionnaire were randomly administered personally to consented participants by the researcher and research assistants who were purposely trained for data collection. The research assistants were trained using a guideline in the form of a protocol prepared along with the questionnaire. The respondents did not need assistance in completing the questionnaire because the information on the cover letter and the instructions on how to fill the questionnaire were explicit. The cover letter informed the respondents that the purpose of the study was to learn how individuals feel about certain environmental related issues. Participants were also informed that they were selected at random to participate in the study because it is believed that their opinions will represent the opinions of other people in their community. The purpose of the study was equally explained to each participant before administration of the instrument, and only those who willingly consented to participate in the study were given questionnaires to complete. Data collection was under the condition of anonymity, and consent for the management of the data collected in the research was considered implicit in willingly agreeing to complete the questionnaire for the survey. For these reasons, no written consent for participation was obtained. No incentive was given.

However, questionnaires could not be sent by post to households due to the nature of the issue under consideration (public attitude related to littering and preventive actions), characteristics of the setting (buildings are lumped together, no clearly demarcated streets or well laid out neighbourhoods), and the setting comprises of commercial and residential buildings (a building sometimes serves dual purpose of a residence, an office, or a shop). Therefore, at each selected community, building, office, and shop were randomly selected and questionnaires were randomly administered to individuals met at those places at late morning, around mid-day, or in the evening. Participants were verbally debriefed once they had completed and returned the questionnaire to the researcher and research assistants. Some questionnaires were filled and returned immediately while others were retrieved after repeated visits. Data collection lasted for four months after which a total of one thousand, five hundred and twenty ($n = 1,520$) questionnaires were retrieved. The collected questionnaires were screened for adequacy and missing data, after which one thousand three hundred and sixty completed questionnaires were selected for data analysis. The rest were rejected due to missing information.

F. Data Analysis

Analyses included descriptive statistics, correlation to examine the relationship among variables of the study, series of simple linear multiple regression analysis to test mediational hypothesis. Prior to further analysis, scores for littering behaviour, attitude towards littering, and self-monitoring were examined through SPSS programs for the extent to which the data met the assumptions of normality and justification for using parametric analyses. The results as presented in Table I show that the data met the assumptions of normality. Correlations between predictor variable, the mediator, and the dependent variable were also examined in order to meet the requirements of multiple regression statistical analysis.

TABLE I CORRELATION MATRIX SHOWING RELATIONSHIPS AMONG VARIABLES OF THE STUDY

Variables	Mean	Sd	1	2	3
1. Responsible Environmental Behaviour	152.97	32.18	(0.94)		
2. Attitude towards Littering	79.29	13.53	-.53**	(0.86)	
3. Self-monitoring	44.35	09.80	-.25**	-.71**	(0.87)

* = $p < .05$, ** = $p < .01$

$n = 1,360$; alpha reliabilities are given in parentheses.

IV. RESULTS AND DISCUSSION

Baron and Kenny (1986) ^[26] recommended three conditions that must be met in mediation analysis. First, existence of a significant relationship between the independent variable and the mediator, if the mediator is not associated with the independent variable, then it cannot mediate anything. Second, a significant relationship between the mediator and the dependent variable; and third, there must be a significant relationship between the independent

variable and the dependent variable. These assumptions were tested using Pearson r correlational analysis. The correlation coefficients presented in Table I reveal the general description of the relationship among the study variables.

In Table I, means, standard deviations, Pearson zero-order correlations, and alpha coefficient of the study measures are presented.

As shown in Table I, responsible environmental behaviour was significantly and negatively related to attitude towards littering ($r = -.53$; $p < .01$). This relationship can be classified as a moderate relationship, suggesting that participants who reported negative attitude towards littering were particularly willing to engage in anti-littering actions.

Regarding the second condition, self-monitoring was significantly and negatively related to engaging in anti-littering actions ($r = -.25$; $p < .01$), suggesting that it is possible to increase individuals' level of self-monitoring and taking anti-littering actions can increase over time. Lastly, the third condition was established because attitudes towards littering was significantly and negatively related to self-monitoring ($r = -.71$; $p < .01$). This relationship can be classified as a strong relationship, meaning that as level of self-monitoring increases, attitude towards littering become more negative. These findings did not violate the assumptions of Baron and Kenny and met the condition for mediational analysis.

Test of Hypothesis

It was hypothesized that the relation between self-monitoring and responsible environmental behaviour would be mediated by attitude towards littering (see Fig. 1). To test mediation, the procedure of Baron and Kenny (1986) ^[26] was adopted to test whether the relationship between self-monitoring and responsible environmental behaviour was mediated by attitude towards littering (Fig. 2). Evidence of partial mediation was established. Self-monitoring had a significant negative influence on the mediator, $\beta = -0.71$, $t = -37.17$, $p < .001$, but no significant influence on responsible environmental behaviour, $\beta = -.05$, $t = -1.64$, $p > .05$. Attitude towards littering had a negative influence on responsible environmental behaviour, $\beta = -.09$, $t = -3.30$, $p < .001$. Finally, controlling for the indirect path through attitude towards littering, the influence of self-monitoring on responsible environmental behaviour was significant $\beta = -.12$, $t = -3.03$, $p < .05$, and the beta coefficient was increased from what it was when only self-monitoring was regressed on responsible environmental behaviour, indicating that the influence of self-monitoring on responsible environmental behaviour was (partially) mediated by attitude towards littering. This pattern implies that self-monitoring is a direct antecedent for attitude towards littering while it had indirect influence on responsible environmental behaviour through attitude towards littering. Therefore, the hypothesis of the study was partially supported.

The direct and indirect paths linking self-monitoring to attitude towards littering and to responsible environmental behaviour are presented in Fig. 2.

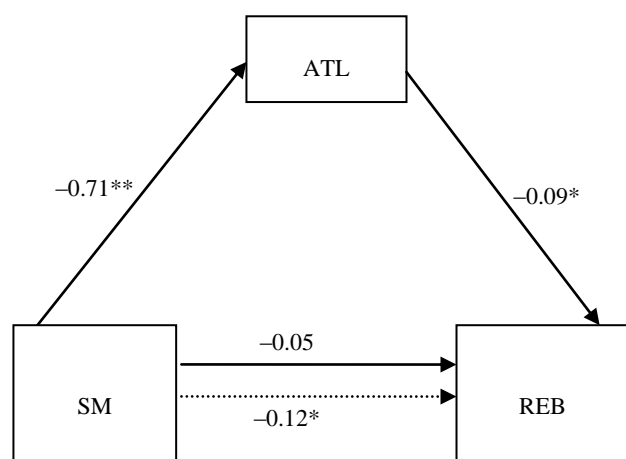


Fig. 2 Mediating model showing the relationship between self-monitoring and responsible environmental behaviour, as mediated by attitude towards littering

Along the lower path, the dashed line indicates the indirect effect of self-monitoring when attitude towards littering is included in the model. Asterisks indicate significant path coefficients (** $p < .01$, * $p < .05$).

Key: SM = self-monitoring, ATL = attitude towards littering, REB = responsible environmental behaviour

Findings revealed that though very small, attitude towards littering did mediate the relationship between self-monitoring and responsible environmental behaviour. Put differently, self-monitoring increases responsible environmental behaviour through attitude towards littering. Indeed, people's indifference to anti-littering actions in many Nigerian cities, particularly in Ibadan city may have less to do with whether individuals are sensitive or not sensitive to environmental cues or behaviour setting norms. But self-monitoring may change attitude towards littering (the mediator), which in turn changes responsible environmental behaviour. One of the social costs of positive attitude towards littering may be a flagrant disregard for anti-littering signs, and consequentially, low or none anti-littering actions. This finding is similar to previous findings in this area (see [9, 12]), and suggests that attitude re-engineering through cognitive restructuring could be a panacea for engaging in anti-littering actions.

An interesting finding that emerged is the lack of significant influence of self-monitoring on responsible environmental behaviour despite significant association established in the bivariate analysis. Possibly, inclusion of other variables in the correlational analysis accounted for this significant relationship. However, it should be noted that the present outcome is no exception. Behaviour often is a function of multiple dispositions, not merely one [38]. A plausible explanation for this finding is the sensitive nature of the construct under consideration; regardless their types of self-monitoring, individuals are expected to deny taking less littering preventive actions in public social contexts. The desire to present admirable impression could make individuals over-reporting taking anti-littering actions. It is the belief of the authors that the level of responsible environmental behaviour reported by the participants in this study may not be a true reflection of environmental situation in Ibadan because throwing of wastes carelessly from moving vehicles and while walking on the streets by

individuals is a daily occurrence in the city.

The findings on self-monitoring also suggest a potential explanatory variable for the influence of self-monitoring on attitude towards littering. Probably because high self-monitors are more sensitive to social cues, they are more likely to be deliberate and more concern about self-presentation, and could have responded to items on attitude towards littering in order to meet social norm, etiquette, and approval. And because low self-monitors are more likely to be impulsive with less self-monitoring skills to gauge appropriateness or inappropriateness of their own behaviour, they are more likely to report their attitude towards littering as they perceive it due to their impulsive nature.

Lastly, findings about attitude towards littering and responsible environmental behaviour are in line with the well-documented attitude-Behaviour theory (see [33]), though attitudes do not always translate into environmentally friendly behaviour, they often do [35]. The relationship found in this study was small, but the finding is consistent with previous findings in this area (see [9]).

V. CONCLUSIONS

The findings of this study summarily establish that self-monitoring is a significant antecedent to attitude toward littering, but not to responsible environmental behaviour, while attitude towards littering partially mediates the relationship between self-monitoring and responsible environmental behaviour. It is therefore recommended that stakeholders who have waste management as their priority should utilize this information when guidelines for public education and littering prevention programs are being developed. An integrated approach to litter prevention that combines cognitive, social, and technical solutions is recommended as the most effective tool of improving engagement in anti-littering actions. A cognitive solution would be convincing people not to litter, to perceive littering as signs of untidiness and incivility, and creating awareness on the implications of littering the public space for quality of private space. Both empowerment and cognitive solutions could be diffused via identification and recruiting of potential "Gatekeepers" (i.e., people who are credible and believable) that may be in position to assist in transmitting attitudinal change and behaviour modification information to the target audience. As biographical information indicated, participants are of diverse background, hence diverse opinion leaders and organizations that function to satisfy particular needs for the individuals would be an ideal ally in doing this. Such gatekeepers may include family, school, religious organizations, community leaders, peer groups, youth organizations (National Youth Service Corps-NYSC), mass media (e.g., radio, television, videos, newspapers, magazines, internet etc), work organizations (e.g., Nigeria Labour Congress, Trade Union Congress etc), and various social groups/units. Social solution may include giving existing anti-littering law a bite and substantial fine for those caught littering. Technical solution may include provision of facilities (e.g., litter bins more staff for frequent street sweeping etc). In conclusion, the practical contribution of this study is that it investigates possible antecedent and mediator of responsible environmental behaviour in a highly indigenous setting.

Implications of Study Findings

The aim of this study was to test the mediatory role of attitude towards littering on the relationship between self-monitoring and responsible environmental behaviour. Findings indicated that attitude towards littering partially mediates the relationship between self-monitoring. The implications discussed here are mainly applicable to littering among the participants of this study. If found to be valid and reliable in future studies, they may however be extended to other settings. Firstly, self-monitoring significantly predicts attitude towards littering, implying that consideration should be given to different types of self-monitoring when theories and models of attitude towards littering are being developed. Findings also have implication for developing waste management priority by suggesting that practitioners should assess levels of self-monitoring of the group targeted for attitudinal change before developing interventions and incorporate this information into littering prevention.

Secondly, self-monitoring was not a significant predictor of responsible environmental behaviour. This indicates that there are multiple causes of human behaviour, and implies that both high and low self-monitors may benefit from similar intervention strategies in order to improve their tendencies to engage in anti-littering actions. Such intervention may include psychological skill empowerment.

Thirdly, attitude towards littering partially mediates the relationship between self-monitoring and responsible environmental behaviour. In a more specific way, self-monitoring predict responsible environmental behaviour through the mediating role of attitude towards littering. Thus, waste managers should incorporate cognitive solution to littering prevention measures. It is therefore suggested that psychologists should be involved in the designing of littering prevention strategies. This will ensure the inclusion of behavioural issues in such strategies.

Fourthly, situational constraints (e.g., lack of or insufficient facilities) may prevent the possibility of taking anti-littering actions even when individuals are willing and determine to do so, and since the present study did not examine the influence of situational constraints on attitude towards littering and responsible environmental behaviour, respectively, this prohibits discussion of whether the outcome variables in this study result only from situational factors, personality dispositions, or an interaction of both factors. This suggests further studies to specifically examine the role of situational constraints on attitude towards littering and responsible environmental behaviour.

Finally, it is important to discuss limitations of the study. First, a greater percentage of variance in both attitude towards littering and responsible environmental behaviour are not accounted for by self-monitoring in this study, this implies that researchers, practitioners, and policy formulators should take account of other psycho-social factors such as the social, cultural, and institutional contexts in which attitudes and behaviours are formed when explaining and developing littering management measures. Second, the data for the study were from self-ratings. Corroborating data from other key informants (e.g., government and its agency or co-residents) could have provided different perceptions about the residents'

environmental attitude and behaviour. Therefore, a follow-up study to incorporate key informants' perceptions may add to the credibility of the findings. Third, this study investigated only one predictor variable and a mediator; including more predictors and mediators may reveal different results. Thus, inclusion of more personality measures may assist more precise litter prevention measure. Efforts should be directed at identifying and testing more mediators.

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