

Self-Concept, Self-Regulation and Waste Disposal Attitudes among Secondary School Students: Evidence from Akwa Ibom State, Nigeria

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ABSTRACT

This study examined the influence of self-concept and self-regulation on students' attitudes towards waste disposal in public secondary schools in Akwa Ibom State, Nigeria. The study adopted a descriptive survey research design. The population comprised Senior Secondary School students in selected public secondary schools across ten Local Government Areas of Akwa Ibom State. Through stratified, purposive, and systematic random sampling techniques, a sample of 1,179 students was selected for the study. Data were collected using the *Demographic and Psychosocial Variables and Students' Waste Disposal Scale (DPVSWDS)*, a 25-item questionnaire with a Cronbach's alpha reliability coefficient of .84. Independent samples t-test and one-way Analysis of Variance (ANOVA) were used to test the hypotheses at the .05 level of significance. The findings revealed that self-concept significantly influenced students' attitudes towards waste disposal, with students possessing high self-concept demonstrating more positive attitudes than those with low self-concept, $t(1177) = 3.732, p < .05$. The results also showed that self-regulation significantly influenced students' attitudes towards waste disposal, $F(2, 1176) = 33.326, p < .05$. Post hoc comparisons indicated significant differences among students with high, medium, and low levels of self-regulation, with students exhibiting higher self-regulation reporting more positive waste disposal attitudes. The study concluded that self-concept and self-regulation are important psychosocial determinants of waste disposal attitudes among secondary school students. It was recommended that schools incorporate programmes aimed at strengthening students' self-concept and self-regulatory skills alongside conventional environmental education initiatives to promote responsible waste disposal behaviours.

Keywords: self-concept, self-regulation, waste disposal attitudes, environmental behaviour, secondary school students, Akwa Ibom State

INTRODUCTION

The educational system is undoubtedly a system of production, and secondary schools occupy a critical position in the formation of students' values, civic orientations, and behavioural dispositions. Among the most pressing behavioural concerns confronting secondary school administrators, teachers, and public health practitioners in Nigeria is the persistent challenge of indiscriminate waste disposal within school premises. Schools, which are expected to model responsible environmental behaviour and serve as seedbeds for civic responsibility, are frequently reported as sites of significant waste mismanagement, including littering, improper refuse disposal, and disregard for designated waste receptacles (Debrah, Vidal, and Dinis, 2021; Nnonyelu and Dongjie, 2024). This situation persists despite governmental investment in waste management infrastructure, institutional directives on environmental hygiene, and the inclusion of environmental education themes in the national

secondary school curriculum, pointing to a deeper psychosocial dimension that knowledge-based interventions alone cannot adequately address.

Contemporary research in environmental psychology and health behaviour science increasingly acknowledges that attitudes towards environmentally responsible behaviours are not solely determined by knowledge or access to waste management infrastructure, but are significantly shaped by individuals' internal psychological orientations including how they perceive themselves and how effectively they regulate their behaviours (Steg and Vlek, 2009; Lisboa, Gomez-Roman, Guntin, and Monteiro, 2024). Oyjje, Ndububa, and Ndububa (2020) reported across Nigerian states that indiscriminate dumping of solid waste remained endemic despite community awareness interventions, suggesting that deeper psychosocial mechanisms must be addressed to achieve durable behavioural change. Two such psychosocial variables of growing scholarly significance are self-concept and self-regulation.

Self-concept refers to the totality of beliefs, perceptions, and evaluative judgements that individuals hold about themselves, encompassing their sense of identity, capability, and personal responsibility across behavioural domains (Marsh and Craven, 2006; Nagar and Nagar, 2019). Research has consistently linked positive self-concept to pro-environmental attitudes, as students whose self-image incorporates a sense of environmental responsibility are more likely to act in ways that are consistent with that identity (Akpan, Umoh, and Udofia, 2024; Lisboa, Gomez-Roman, Guntin, and Monteiro, 2024). Self-regulation, on the other hand, refers to the capacity of individuals to monitor, control, and direct their own thoughts, emotions, and behaviours in pursuit of personal and social goals (Zimmerman, 2000; Opdenakker, 2022). Students with strong self-regulatory capacities are better positioned to resist impulsive anti-environmental behaviours, set waste reduction goals, monitor their disposal habits, and sustain environmentally responsible practices even in the absence of external supervision (Pelletier, Baxter, and Huta, 2024; Ryan and Deci, 2022).

In Akwa Ibom State, a densely populated state in the Niger Delta region of Nigeria, public secondary schools serve a diverse student population from varying socioeconomic backgrounds. Observable disparities in waste disposal practices across school settings suggest that attitudinal variables beyond knowledge and infrastructure access may account for behavioural differences (Onungwe, Hunt, and Jefferson, 2023). A review of available literature reveals no study that has holistically examined the joint influence of self-concept and self-regulation on students' waste disposal attitudes within the public secondary school system in Akwa Ibom State. Some studies have revealed significant relationships between psychosocial variables and environmental behaviour (Bartolo, Servidio, Palermi, Nappa, and Costabile, 2023; Qin, Wu, Bi, Deng, and Hu, 2024); other studies, particularly in developing country educational contexts, report inconsistent or limited findings (Aboyade-Adedeji, Adeyemi, and Ajala, 2025). These inconclusive findings and the evident empirical gap in the Akwa Ibom State secondary school context provide a compelling rationale for this study.

It can be said from the foregoing that given the importance of psychosocial variables to students' waste disposal attitudinal orientations, there is a need for a study to examine the influence of self-concept and self-regulation on secondary school students' attitudes towards waste disposal. This study is therefore situated within this identified empirical gap and theoretical context, and is expected to contribute original evidence to the environmental education and health behaviour literature with practical implications for the design of psychosocially informed environmental behaviour change programmes in Nigerian secondary schools.

Purpose of the Study

The main purpose of this study is to examine the influence of self-concept and self-regulation on secondary school students' waste disposal attitudes in public secondary schools in Akwa Ibom State, Nigeria.

Specifically, the study sought to examine the influence of:

- i. Self-concept on secondary school students' attitude towards waste disposal.
- ii. Self-regulation on secondary school students' attitude towards waste disposal.

Research Hypotheses

The following null hypotheses were formulated to guide this study and were tested at the .05 level of significance:

- i. Self-concept has no significant influence on secondary school students' attitude towards waste disposal.
- ii. Self-regulation has no significant influence on secondary school students' attitude towards waste disposal.

LITERATURE REVIEW

Conceptual Framework: Waste Disposal Attitudes in Secondary Schools

Waste disposal attitudes are understood as multidimensional cognitive, affective, and conative orientations that predispose individuals to respond favourably or unfavourably to responsible waste management practices (Fishbein and Ajzen, 1967). Positive waste disposal attitudes manifest as willingness to use designated waste bins, avoid littering, participate in recycling activities, and encourage peers towards responsible disposal, while negative attitudes are associated with indifference to proper waste handling and rationalisation of littering behaviours (Guay, 2022; Gherheş, Farcasiu, and Para, 2022). In Nigerian secondary schools, the gap between students' environmental knowledge and their actual waste disposal behaviours have been widely documented, reinforcing the case for examining psychosocial mediators such as self-concept and self-regulation (Debrah, Vidal, and Dinis, 2021; Onungwe, Hunt, and Jefferson, 2023).

Theoretical Underpinning

This study is anchored on Self-Determination Theory (Deci and Ryan, 1985; Ryan and Deci, 2022) and the Theory of Planned Behaviour (Fishbein and Ajzen, 1967; Ajzen, 1991). Self-Determination Theory (SDT) posits that human behaviour is optimally motivated when individuals experience autonomy, competence, and relatedness, and that the internalisation of environmental norms into one's self-concept produces more durable and genuinely motivated pro-environmental attitudes than externally enforced compliance (Guay, 2022; Ryan and Deci, 2022). Spitzer and colleagues (2024), applying SDT to youth environmental engagement, demonstrated that environments supporting autonomy and competence needs significantly enhanced students' internalisation of environmental responsibility norms. The Theory of Planned Behaviour (TPB) complements SDT by situating self-concept as an influence on attitudinal evaluations and self-regulation as a correlate of perceived behavioural control, both of which are direct determinants of behavioural intentions towards waste disposal (Ajzen, 1991; Pelletier, Baxter, and Huta, 2024).

Self-Concept and Waste Disposal Attitudes

Several studies have examined how students' self-perceptions influence their waste disposal attitudinal orientations. Akpan, Umoh, and Udofia (2024), investigating age, gender, and self-concept as predictors of solid waste management among residents in Cross River State, Nigeria, established that self-concept was a significant independent predictor of solid waste management practices, with high self-concept individuals engaging more consistently in responsible disposal behaviours. The authors argued that the identity dimensions of self-concept are particularly salient in communal African societies, where alignment of personal behaviour with community environmental expectations constitutes an important component of positive self-perception. This finding, derived from a geographically and culturally proximate population, provides direct empirical support for the relevance of self-concept as a predictor of waste disposal attitudes in the present study's context.

Lisboa, Gomez-Roman, Guntin, and Monteiro (2024) conducted a systematic review of research on pro-environmental behaviour, personality, and emotional intelligence in adolescents, and found that environmental self-identity, a dimension of self-concept involving the degree to which individuals include environmental protection in their personal identity, was one of the most robust predictors of pro-environmental behaviour. Qin, Wu, Bi, Deng, and Hu (2024) demonstrated in a study of 1,851 secondary school students that future self-continuity, a self-concept dimension related to individuals' sense of connection between their present and future

selves, significantly predicted pro-environmental behaviour through the mechanism of green self-efficacy. Bartolo, Servidio, Palermi, Nappa, and Costabile (2023) similarly confirmed in an Italian adolescent sample that positive self-perceptions and place attachment were significant predictors of pro-environmental behaviours including waste-related practices, operating through the sense of personal responsibility that students attach to their school and community environments. Some studies have, however, indicated that the self-concept and environmental behaviour relationship is moderated by situational and normative factors (Ugwuanyi, Nnolum, Nwachukwu, and Inweregbuh, 2022), underscoring the need for contextually grounded empirical investigations such as the present study.

Self-Regulation and Waste Disposal Attitudes

The relationship between self-regulation and environmental attitudinal and behavioural outcomes has received growing empirical attention. Pelletier, Baxter, and Huta (2024), in a scoping review of 62 primary research articles on predictors of pro-environmental behaviour in adolescence, identified self-regulatory processes as among the most consistently significant individual-level predictors of sustained pro-environmental behaviour, functioning through the mechanisms of goal commitment, self-monitoring of environmental actions, and perceived behavioural control. Opdenakker (2022) demonstrated in early adolescents that teacher-supportive behaviours significantly enhanced students' self-regulation capacities, and that self-regulation in turn predicted more positive goal-directed compliance with institutional norms including environmental regulations. These findings suggest that the school social environment constitutes a critical context for self-regulatory development relevant to waste disposal attitudinal formation.

Within Nigerian educational settings, Aboyade-Adediji, Adeyemi, and Ajala (2025) confirmed that self-regulation, operationalised as awareness-driven behavioural control, was a significant predictor of waste disposal practice beyond the effects of knowledge and attitude alone among Nigerian university undergraduates. Gherheş, Farcasiu, and Para (2022) found among university students in Romania that students demonstrating stronger self-regulatory orientations showed significantly more positive attitudinal orientations towards selective waste collection. Ryan and Deci (2022), in a comprehensive meta-review of Self-Determination Theory meta-analyses, confirmed that autonomous self-regulation produces significantly stronger and more durable behavioural outcomes than controlled regulation, a finding with direct implications for understanding how self-regulation shapes waste disposal attitudes among students whose environmental behaviours are frequently unsupervised.

METHODOLOGY

Research Design

The design adopted for this study was a descriptive survey design. Descriptive survey research design is used to find out what situations, events, attitudes, or opinions are occurring in a population and tries to address issues of distribution of phenomena among subgroups (Creswell and Creswell, 2018). This design was considered appropriate because the study sought to use information obtained through questionnaires in describing and comparing observed psychosocial phenomena across identifiable student groups.

Area of the Study

This study was conducted in Akwa Ibom State, one of the 36 states in Nigeria, situated in the Niger Delta region of South-South Nigeria. The state has 31 Local Government Areas. For the purposes of this study, ten Local Government Areas were selected, namely: Etinan, Ibiono Ibom, Uyo, Ikot Ekpene, Abak, Obot Akara, Ikono, Mkpato Enin, Okobo, and Urue Offong. These LGAs represent a mix of urban, semi-urban, and rural secondary school settings and provide a diverse and representative context for examining the study's research questions.

Population of the Study and Sample

The population of the study comprised all Senior Secondary School One (SS1), Senior Secondary School Two (SS2), and Senior Secondary School Three (SS3) students enrolled in public secondary schools across the ten selected Local Government Areas of Akwa Ibom State. A stratified random sampling technique was used to

select 50% of the public secondary schools within each sampled Local Government Area. Thereafter, purposive sampling was employed to include all available students within the selected schools, while systematic random sampling was used to select respondents proportionately from each educational level. This procedure yielded a final sample of **1,179 students**, comprising students from SS1, SS2, and SS3 classes across the sampled schools.

Instrumentation

The instrument used for data collection was a questionnaire titled the Demographic and Psychosocial Variables and Students' Waste Disposal Scale (DPVSWDS). The instrument was divided into two sections. Section A elicited demographic information of the respondents. Section B was made up of 25 items: five items measuring self-concept, five items measuring self-regulation, and thirteen items measuring attitude towards waste disposal, all organised on a four-point Likert scale ranging from Very High Extent (VHE = 4) to Very Low Extent (VLE = 1). The reliability of the instrument was established using the Cronbach alpha technique, yielding a coefficient of .84, providing sufficient evidence that the instrument was internally consistent for measurement purposes. For analytical purposes, students were classified into high and low self-concept groups based on their scores relative to the sample mean on the self-concept subscale. Students were further classified into high, medium, and low self-regulation groups based on their self-regulation subscale scores and the distribution across the sample.

Procedure for Data Collection

The instruments were administered to respondents in their respective schools by trained research assistants on different occasions. On arrival at each sampled school, permission was obtained from the school principal before the administration of instruments. Respondents were duly informed of the importance of the exercise and were requested to provide honest responses. They were also assured that all data would be treated with utmost confidentiality. At the end of the process, all copies of the instruments were retrieved from respondents, representing a 98.6% rate of return of administered instruments.

Procedure for Data Preparation and Analysis

To ease the process of data preparation, a person-by-item matrix was constructed. Each copy of the instruments was assigned a numerical value for each item response, and a key was developed to guide the coding process. The statements on the instruments were sorted out based on the variables they were purported to measure and scored accordingly for positively and negatively worded items. The independent samples t-test statistical technique was employed for the analysis of hypothesis one, while one-way Analysis of Variance (ANOVA) was employed for hypothesis two. Tukey's Honestly Significant Difference (HSD) post-hoc test was applied following significant ANOVA results to identify specific pairwise group differences. All null hypotheses were tested at the .05 level of significance.

RESULTS

The results of the study are presented based on the hypotheses formulated to guide the study. The following tables present the results of the study.

Hypothesis 1

Self-concept has no significant influence on secondary school students' attitude towards waste disposal. In testing this hypothesis, self-concept was divided into high self-concept and low self-concept groups, with the independent samples t-test used as the statistical tool. The result of the analysis is presented in Table 1.

Table 1: Independent Samples t-Test Result for Self-Concept and Students' Attitude towards Waste Disposal (N=1179)

Self-concept	N	X	SD	Df	t-cal	Sig. (2tailed)
High	608	26.2469	11.43971	1177	3.732	.000

Low	571	23.9309	9.84870			
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Significant at .05 level

An independent t-test was conducted to determine if there is a significant difference in students' attitudes toward waste disposal based on their self-concept level (high vs. low). The sample consisted of 1,179 students, with 608 categorized as having a high self-concept and 571 as having a low self-concept. The mean attitude score for students with a high self-concept was 26.25 (SD = 11.44), while those with a low self-concept had a mean score of 23.93 (SD = 9.85). The t-test analysis revealed a statistically significant difference between the two groups, $t(1177) = 3.732, p = .000$, indicating that students with a high self-concept have a more positive attitude towards waste disposal compared to students with a low self-concept. This result suggests that self-concept is an influential factor in shaping students' attitudes towards waste disposal, with higher self-concept levels associated with more favorable attitudes.

Hypothesis 2

Self-regulation has no significant influence on secondary school students' attitude towards waste disposal. In testing this hypothesis, self-regulation was categorised into three groups: high, medium, and low self-regulation. The one-way Analysis of Variance (ANOVA) was used as the statistical tool. The result of the analysis is presented in Table 2.

Table 2 One-Way ANOVA Result for Self-Regulation and Students' Attitude towards Waste Disposal (N=1179)

Sources of variances	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	7325.912	2	3662.956	33.326	0.00
Within Groups	127724.827	1176	108.610		
Total	135050.740	1178			

The results presented in Table 2 indicate that self-regulation significantly influenced students' attitudes towards waste disposal. The computed F-ratio of 33.326 with 2 and 1176 degrees of freedom was statistically significant at the .05 level ($p < .001$). This finding implies that significant differences exist in waste disposal attitudes among students with high, medium, and low levels of self-regulation.

Given the significant omnibus F-test, a post hoc comparison using Fisher's Least Significant Difference (LSD) procedure was conducted to identify the specific groups responsible for the observed differences. The results revealed that students with high self-regulation demonstrated significantly more positive attitudes towards waste disposal than those with medium and low self-regulation, while students with medium self-regulation also exhibited significantly more positive attitudes than those with low self-regulation. Consequently, the null hypothesis stating that self-regulation has no significant influence on secondary school students' attitudes towards waste disposal was rejected. To determine the source of specific group differences, Tukey's HSD post-hoc comparison was conducted and its results are presented in Table 3.

Table 3: Fisher LSD Post-Hoc Comparison of Self-Regulation Groups on Attitude towards Waste Disposal

(I) self-regulation	(J) self-regulation	Mean Difference (I-J)	Std. Error	Sig.
Low	Medium	3.44978*	.75935	.000
	Low	6.36973*	.77569	.000
High	High	-3.44978*	.75935	.000

	Low	2.91995*	.71410	.000
Medium	High	-6.36973*	.77569	.000
	Medium	-2.91995*	.71410	.000

*. The mean difference is significant at the 0.05 level.

The LSD post hoc comparison revealed significant differences among all three self-regulation groups. Students with low self-regulation differed significantly from students with medium self-regulation (Mean Difference = 3.45, $p < .001$) and students with high self-regulation (Mean Difference = 6.37, $p < .001$). Similarly, students with medium self-regulation differed significantly from students with high self-regulation (Mean Difference = 2.92, $p < .001$). These findings indicate a progressive increase in positive waste disposal attitudes as students' levels of self-regulation increase. The results therefore suggest that students who possess stronger self-regulatory capacities are more likely to exhibit favourable attitudes towards responsible waste disposal practices than students with lower levels of self-regulation.

DISCUSSION

The result of hypothesis one revealed that self-concept has a significant influence on secondary school students' attitude towards waste disposal, with students who demonstrated high self-concept recording significantly more positive waste disposal attitudes than their low self-concept counterparts. This finding is consistent with the positions of several scholars. Akpan, Umoh, and Udofia (2024), in their study of age, gender, and self-concept as predictors of solid waste management among residents in Cross River State, Nigeria, established that self-concept was a significant predictor of solid waste management practices, with high self-concept individuals engaging more consistently in responsible disposal behaviours. Similarly, Lisboa, Gomez-Roman, Guntin, and Monteiro (2024) confirmed in a systematic review that environmental self-identity, a core self-concept dimension, was one of the most robust predictors of pro-environmental behaviour in adolescents across multiple country contexts.

The finding further aligns with the conclusions of Qin, Wu, Bi, Deng, and Hu (2024), who demonstrated among 1,851 secondary school students that green self-efficacy, a domain-specific component of positive self-concept, significantly mediated the relationship between future self-continuity and pro-environmental behaviour. Bartolo, Servidio, Palermi, Nappa, and Costabile (2023) provided complementary evidence in an Italian adolescent sample that positive self-perceptions were significant predictors of pro-environmental behaviours including waste-related practices, operating through the sense of personal responsibility students attach to their environment. The result of this study is however at variance with the position of Ugwuanyi, Nnolum, Nwachukwu, and Inweregbuh (2022), who noted that the self-concept and behavioural outcomes relationship is susceptible to moderation by situational and normative variables, suggesting that the positive self-concept finding obtained in this study may be context-specific to the Akwa Ibom State secondary school environment. This finding suggests that interventions designed to enhance students' self-concept, particularly the environmental identity dimension, may yield meaningful attitudinal improvements as complements to knowledge-based environmental education.

The result of hypothesis two revealed that self-regulation has a significant influence on secondary school students' attitude towards waste disposal, with high self-regulation students recording the most positive attitudes and low self-regulation students the least positive, with significant pairwise differences confirmed across all three groups. This finding is consistent with the position of Pelletier, Baxter, and Huta (2024), who in a scoping review of 62 primary studies identified self-regulatory processes as among the most consistently significant predictors of sustained pro-environmental behaviour in adolescents. In a related study, Opdenakker (2022) demonstrated that students with enhanced self-regulatory capacities showed significantly more positive goal-directed compliance with institutional norms including environmental regulations. Within the Nigerian context, Aboyade-Adedeji, Adeyemi, and Ajala (2025) confirmed that self-regulation was a significant predictor of waste disposal practice beyond the effects of knowledge and attitude alone, a finding whose convergence with the

present results strengthens the evidence base for self-regulation as a key psychosocial determinant of waste disposal attitudinal outcomes in Nigerian educational settings.

The finding is further consistent with Ryan and Deci (2022), whose comprehensive meta-review of Self-Determination Theory meta-analyses confirmed that autonomous self-regulation produces significantly stronger and more durable behavioural outcomes than externally controlled regulation. Gherheș, Farcasiu, and Para (2022) similarly found that students with stronger self-regulatory orientations demonstrated significantly more positive attitudinal orientations towards selective waste collection. The progressive and graduated nature of the self-regulation effect, confirmed through post-hoc analysis across all three self-regulation groups, suggests that even moderate improvements in self-regulatory capacity from low to medium may translate into meaningful attitudinal improvements, a finding that increases the practical feasibility of tiered self-regulation skill development programmes in resource-constrained Nigerian secondary school settings. This result is, however, at variance with studies that have found non-significant relationships between self-regulatory variables and specific environmental attitudinal outcomes in constrained institutional contexts (Aboyade-Adediji, Adeyemi, and Ajala, 2025), differences that may reflect variations in the operationalisation of self-regulation, sample characteristics, and the degree of environmental norm enforcement within specific school settings.

CONCLUSION

This study investigated the influence of self-concept and self-regulation on secondary school students' attitudes towards waste disposal in public secondary schools in Akwa Ibom State, Nigeria. The findings established that both variables significantly influenced students' waste disposal attitudinal orientations. Students with high self-concept demonstrated significantly more positive attitudes towards waste disposal than those with low self-concept, reflecting the identity-behaviour consistency mechanisms described within Self-Determination Theory and the Theory of Planned Behaviour. Students with high self-regulation demonstrated the most positive waste disposal attitudes, followed progressively by medium and low self-regulation students, with significant pairwise differences confirmed across all three groups through post-hoc analysis.

These findings establish self-concept and self-regulation as significant psychosocial predictors of waste disposal attitudes in the Nigerian secondary school context, contributing original evidence to a literature that has predominantly focused on structural and demographic explanatory variables. The study's large, stratified sample, validated instrument, and dual theoretical grounding strengthen confidence in the reliability and contextual generalisability of its conclusions within the public secondary school system of Akwa Ibom State.

Implications of the Study

The findings of this study carry significant implications for educational policy, curriculum development, school counselling, and environmental management practice in Akwa Ibom State and across Nigeria.

For educational policymakers, the demonstration that self-concept and self-regulation are significant psychosocial predictors of waste disposal attitudes provides empirical justification for integrating psychosocial skill development objectives into the environmental education component of the Nigerian secondary school curriculum. Pelletier, Baxter, and Huta (2024) recommended that environmental education policy in developing country contexts expand beyond knowledge-based curricula to incorporate self-regulatory capacity and environmental identity as intervention targets, a recommendation reinforced by the findings of this study. The Federal Ministry of Education and the Akwa Ibom State Ministry of Education should consider revising existing curriculum frameworks to include structured self-concept enhancement and self-regulation skill development activities within environmental health education modules.

For school counsellors and administrators, the findings highlight the importance of creating school environments that nurture positive student self-concepts and provide structured opportunities for self-regulatory skill development. Opdenakker (2022) demonstrated that teacher-supportive behaviours, characterised by autonomy support and competence feedback, significantly enhance adolescent self-regulation, and school counsellors should design environmental mentorship and peer-led waste management programmes that simultaneously build students' environmental identity and self-regulatory capacity. Ryan and Deci (2022) further confirmed that

school environments supporting students' basic psychological needs create conditions that foster both positive self-concept development and stronger self-regulatory capacities, recommendations directly applicable to the design of school environmental programmes in Akwa Ibom State.

For classroom teachers, the findings suggest the value of pedagogical approaches combining environmental content with psychosocial skill development. Strategies that invite students to set personal waste management goals, monitor their own disposal behaviours, reflect on the alignment between their environmental values and daily practices, and celebrate improvement in disposal habits may simultaneously enhance self-regulatory capacity and strengthen the environmental dimensions of students' self-concepts. Guay (2022) advocated for teaching approaches that cultivate autonomous forms of self-regulation by connecting environmental learning to students' personal values and identity, a recommendation whose theoretical alignment with the present findings underscores its practical relevance to Nigerian secondary school teachers.

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