

Beyond Awareness: Psychological, Social, and Structural Factors Associated with Sustainable Behavior Among Adolescents in Urban Bengaluru, India

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ABSTRACT

Adolescence is an essential phase of human growth and development, during which pro-environmental beliefs and behaviors develop and frequently carry over into adulthood. This research explored the psychological, social, and situational factors associated with sustainable actions (donation and reuse) of adolescents in urban Bengaluru, India. One hundred and three ($N = 103$) adolescents completed a 21-question survey, which was distributed online, investigating the students' levels of awareness of sustainability, environmental self-identity, the influence of parents and friends, accessibility to sustainability programs and navigation tools to assist with sustainability, as well as motivational factors to encourage sustainable actions. Quantitative data were analyzed using one-way ANOVAs (testing differences in group means) and Spearman's rank-order correlations. Qualitative data were coded and categorized into themes. Statistically significant group differences were found between sustainability familiarity groups and donation frequency ($F(4, 98) = 3.85, p = .006, \eta^2 = .14$), and between environmental self-identity groups and donation frequency ($F(4, 98) = 3.13, p = .018, \eta^2 = .11$). The participants' perceived ease of participation was the largest bivariate correlate of their donation behavior ($r = .44, p < .001$). The association between parental encouragement and donation behavior was stronger than that of peer encouragement (parents: $r = .42, p < .001$; peers: $r = .26, p = .008$). Qualitative themes identified convenience, observable impacts, and gamifying systems as facilitators, and time constraints, access issues, and institutional mistrust as roadblocks. The study findings emphasize the necessity of access to, meaningful interactions with, and development of environmental identity through school-based sustainability programs.

Keywords: Sustainability, Adolescents, Donation, Self-Determination Theory, Behavioral Interventions

1. INTRODUCTION

The world is facing a crisis of sustainability due to the growing environmental degradation, climate change, waste generation and unsustainable consumption patterns (United Nations, 2015). Common sustainable living habits like donating, reusing materials, reducing waste, and supporting sustainable consumption are now acknowledged as common, viable strategies for individuals to help preserve their environment and conserve resources (U.S. Environmental Protection Agency, 2013). Of these, donating and the reuse of goods play a special role as they help to foster circular consumption systems and reduce the disposal of unnecessary goods that are still usable (Geissdoerfer et al., 2017). It is critical to encourage these behaviors in young populations in particular because negative behaviors formed during the adolescent years often continue into adulthood and relate to lifestyle choices in adulthood (Steinberg, 2008).

Adolescent development is a developmental stage with growing autonomy, developing identity and changing social relations. The World Health Organization (2019) defines adolescence as the period from ages 10 to 19, where youth start to form their own value systems, social identities and consumption preferences. There is evidence that the actions and attitudes that are formed in this time can affect behaviour and decision making processes later in life (Balundè et al., 2020). Since adolescents are now more independent consumers, their involvement in sustainability practices could influence their environmental responsibility more generally as adults (Collado et al., 2015). Therefore, it is essential to grasp the factors that promote or hinder sustainable actions during the adolescent years to design good environmental education and sustainable interventions (Evans et al., 2018).

Young people are sometimes worried about the environment and have positive attitudes towards sustainable development, but these attitudes are not always reflected in sustainable behavior. This inconsistency is often expressed as the "attitude-behaviour gap", a gap between people's concerns about the environment and their behaviour (ElHaffar et al., 2020). Research shows that adolescents are often aware of sustainability and environmental protection, but do not always act in accordance with it, for instance by donating, reusing or practicing sustainable consumption (Wiernik et al., 2023). Other inconsistencies have also been found in the field of general pro-environmental behavior research, as pro-environmental attitudes have been shown to be inadequate determinants of green behavior (Kollmuss & Agyeman, 2002). These findings suggest that simply informing people that they should change their behavior is not enough. Rather, motivation and situational constraints are likely more important for situationally influencing what constitutes sustainable behavior, as they affect not only the desire for sustainable behavior, but also the capability to act sustainably (Bamberg & Möser, 2007).

The Theory of Planned Behavior (Ajzen, 1991) is one of the most popular models of behavior decision-making. The theory proposes that attitudes toward the behavior, subjective norms, and perceived behavioral control are the major factors affecting behavior. Attitudes are defined as individuals' judgments about a specific behavior; subjective norms are defined as individuals' perceptions of social expectations; perceived behavioral control is defined as individuals' perceptions of easy or difficult to perform the

behavior. TPB has been widely used in research that investigates pro-environment and sustainable consumption behaviors, and has proven to have a high predictive power in sustainable research (Lavuri, 2021; Yuriev et al., 2020). However, in an adolescent setting, positive environmental attitudes can promote sustainable behavior, and actual engagement in sustainable behavior can also be influenced by adolescents' perceptions of accessibility, convenience, and social support for sustainable practices (Han et al., 2010).

Attitudes and perceived control are not the only factors in determining sustainable behaviour; besides these there is also a special role for motivation. Self-Determination Theory (SDT) classifies motivation into two categories: autonomous motivation and controlled motivation (Ryan & Deci, 2000). Autonomous motivation is when the individual performs a behaviour because it is in congruence with one's values, or has an intrinsic reward, whereas controlled motivation happens when the individual performs a behaviour due to external rewards, pressure or recognition. Intrinsic motivation is shown to have a stronger potential for sustaining behaviour over longer periods than is external motivation (Van der Werff et al., 2014). To boost participation in schools, rewards, competitions, and games are frequently integrated into school sustainability programs (Deterding et al., 2011). Gamification is the application of game-like features like points, rewards, competition, and interactive challenges to encourage behavior. The effects of these strategies are likely to be positive on immediate behaviors, but the possibility of diminishing intrinsic environmental motivation in the long term (Ryan & Deci, 2000) is considered.

Social influences also have an important role in shaping adolescent behavior. As adolescents are very sensitive to social expectations, they often adapt their behavior to fit social norms in their social world (Kollmuss & Agyeman, 2002). Behavioral modelling, encouragement, and the transmission of environmental values by parents is a particularly important influence on behaviour, and social acceptance and normative pressure from peers are additional influences on behaviour (Grønhoj & Thøgersen, 2012). Educational institutions also play a role by making sustainability campaigns, environmental awareness programs and participation initiatives in the schools (Tilbury, 1995). Other research indicates that messages that are more visible socially – for example, showing the social benefit of giving – can boost participation by fostering emotional involvement and the sense of impact (Cryder et al., 2013). Furthermore, contextual factors like convenience, accessibility and institutional trust may significantly impact the feasibility and acceptability of sustainable activities for adolescents (Guagnano et al., 1995). Although there has been growing research regarding pro-environmental behaviour, the literature has tended to focus mainly on populations from the West and our understanding of sustainability behaviour in non-Western educational and cultural settings is still limited (Tam & Chan, 2018). India is especially a relevant context for such research, as there is a high rate of urbanisation, consumerism is on the rise, and there are growing environmental issues (UNEP, 2021). Urban Indian cities offer valuable settings for understanding adolescent's sustainable behaviour through the lens of institutional practices, peer interaction, and coordinated interventions, as they all influence attitude and action towards sustainable development at school (UNESCO, 2020).

In this context, the current study aims to understand the psychological, social and situational factors

associated with sustainable behavior of adolescent school students in urban Bengaluru, India with special focus on donating and reusing behavior. It examines how sustainability awareness, environmental identity, parental influence, peer influence, perceived ease of participation, and motivational factors (rewards and gamification) are associated with adolescents' sustainable actions. This study aims to synthesize the findings of the Theory of Planned Behavior, Self-Determination Theory and social norms research to gain a holistic understanding of what makes adolescents more likely to engage in sustainable behavior in the school environment.

2.LITERATURE REVIEW

2.1 The Attitude–Behavior Gap in Youth Sustainability

Sustainability studies conducted on youth indicate very high levels of environmental awareness among both youths and adults. However, positive environmental attitudes do not always translate into consistent sustainable behaviors. Research shows that the most commonly studied adolescent pro-environmental behaviors are low-cost actions such as conserving energy and water, while more demanding practices such as donating, volunteering, or altering consumer behavior receive far less engagement and research attention (Denault et al., 2024). Structural barriers are some of the reasons why this inconsistency is prevalent. Despite being positive toward sustainability issues, youths rely heavily on their parents for financial decisions, transport services, and buying decisions (Johnstone & Lindh, 2022).

2.2 Ethical Values and Sustainable Intentions

There have been several findings that reveal the impact of ethical value on sustainable intentions among youths. According to Dardanoni and Guerriero (2021), children and teenagers showed an attitude towards financing projects related to the environment, especially those close to their community. Ethical motivations and moral aspects proved more influential in shaping sustainable intentions than convenience and habit did (Vermeir & Verbeke, 2006). Ethical intentions, however, may not be enough for teenagers who cannot afford participating due to various restrictions. Hence, ethical motivation needs to be complemented by availability.

2.3 Social Influence and Support Systems

Findings from research conducted on social influence and sustainability are inconclusive. According to Hassan et al. (2022), there is little evidence suggesting peer influence has an impact on the willingness to purchase sustainable clothing among the youth. On the other hand, family and institutions play a crucial role in influencing sustainable behaviors. Sustainable behaviors can be instilled within children through role modeling, reinforcement, and encouragement from parents (Johnstone & Lindh, 2022). Similarly, schools can create conducive environments where sustainable behaviors are practiced and socially normalized.

2.4 Barriers, Communication, and Behavioral Interventions

Time constraints, untimely scheduling, budget-consciousness, lack of information, and access challenges can be viewed as some of the barriers to sustainable youth engagement (Witek & Kuźniar, 2021). While most young people are willing to adopt sustainability within their daily lives, it often proves quite challenging for them to maintain such behavior. Prior studies indicate the usefulness of communication strategies and structured interventions in fostering participation. Kaczorowska-Spychalska (2023) indicates that the messages in social media on sustainability may not be able to encourage lasting behavior change if they are not practical and emotional. So, it is crucial that sustainability communications are practical and emotional.

3. METHODS

3.1 Research Design

The study adopted a cross sectional mixed methods research design—convergent parallel study design—to evaluate the psychological, social and situational factors associated with sustainable behaviours of the adolescents in the city of Bengaluru, India. Both quantitative and qualitative data were gathered simultaneously and subsequently combined at the analysis and interpretation of the findings stage to provide a comprehensive view of adolescents' donation and re-use behaviour, motivations for sustainable behaviour and the barriers faced by adolescents to sustainable behaviour.

3.2 Participants and Sampling

103 adolescent (10–22 years) children participated in the final analytic sample from Bengaluru, India. The respondents were recruited from schools, acquaintance and social media distribution of the survey link, and a convenience sample. There were no incentives for completing surveys. The details of the participants are summarised in table 4.

Table 1: Participant Demographics (N = 103)

Characteristic	Category	n	%
Age group	Under 13	2	1.9%
	13–15	26	25.2%
	16–18	69	67.0%
	19–21	4	3.9%
	22+	2	1.9%
Gender	Female	56	54.4%
	Male	43	41.7%
	Non-binary	1	1.0%
	Prefer not to say	3	2.9%

Education	Middle school	14	13.6%
	High school	79	76.7%
	Undergraduate/University	7	6.8%
	Other (trade school, primary, unemployed)	3	2.9%
Family income	Middle income	12	11.7%
	Upper-middle income	49	47.6%
	High income	27	26.2%
	Prefer not to say	15	14.6%

Note. The majority of participants were aged 16–18 and enrolled in high school, reflecting the urban secondary-school context in which the survey was primarily distributed.

3.3 Instrumentation

Data collection was accomplished by means of a 21-item structured questionnaire delivered through Google Forms. The questionnaire contained three types of questions: multiple-choice (MCQ) questions, five-point Likert-scale questions, and open-ended questions. Constructs were operationalised as follows: sustainability familiarity was measured by a single item asking how familiar the participant was with sustainability (1 = not familiar at all, 5 = very familiar); environmental self-identity was measured by a single item asking the extent to which the participant sees themselves as someone who cares about the environment (1 = strongly disagree, 5 = strongly agree); perceived ease of participation was measured by a single item asking how easy or difficult it is to donate or reuse items (1 = very difficult, 5 = very easy); parental encouragement was measured by a single item asking the degree to which parents encourage donating or reusing (1 = strongly disagree, 5 = strongly agree); peer influence was measured by a single item asking whether seeing friends donate or reuse makes the participant more likely to do the same (1 = strongly disagree, 5 = strongly agree); donation frequency was measured by a five-category item (Never, Rarely, Sometimes, Often, Always); and reuse frequency was measured by the same five-category format. The instrument was designed using constructs from the Theory of Planned Behaviour (Ajzen, 1991), Self-Determination Theory (Ryan & Deci, 2000), and previous studies of pro-environmental behaviours.

3.4 Procedure

Data was collected via electronic means between January and February 2026. The survey link was distributed through schools, institutional contacts, and social media. Participants completed the questionnaire independently on an internet-connected device. All responses were stored in the Google Forms database. Because single-item measures were used throughout, internal-consistency reliability statistics (e.g., Cronbach's alpha) are not applicable; the face and construct validity of each item was established through alignment with the theoretical constructs described in Section 3.3.

3.5 Data Analysis

The analysis of data was performed using a mixed-methods approach. Quantitative data were analysed using descriptive statistics, one-way ANOVA, Spearman rank-order correlations, and effect-size calculations. Normality was assessed using Shapiro-Wilk tests. The primary outcome variable, donation frequency, is measured on a bounded five-category ordinal scale; Shapiro-Wilk tests confirmed non-normal distributions for this variable and several predictors. Accordingly, Spearman rank-order correlations were used for all bivariate association analyses. One-way ANOVAs were retained for the group-comparison analyses (Sections 4.1 and 4.2) as an exploratory descriptive tool, and results should be interpreted alongside the Spearman correlations rather than as independent tests. Qualitative data from open-ended questions were analysed through thematic analysis following Miles and Huberman (1994), allowing for patterns and themes to be identified with respect to sustainable behaviours of adolescents. Codes were assigned by the first author and reviewed by the second author; themes were finalised by consensus. Representative participant quotations are provided to illustrate each theme.

3.6 Ethics

Ethics were maintained throughout the study. Given that the majority of participants were minors, parental or guardian consent was obtained prior to distribution through school channels; participants additionally provided their own electronic assent before accessing the survey. The study was conducted in accordance with school-level ethical guidelines. Participants were given an explanation of the purpose and nature of research, informed that their participation in the research would be entirely voluntary and that they could withdraw from the research at any time without penalty. All information was anonymous and confidential, and no information was collected that could identify the participants.

4. RESULTS

Table 2: Descriptive Statistics for Key Study Variables (N = 103)

Variable	M	SD	Min	Max
Sustainability familiarity	3.95	0.88	1	5
Environmental self-identity	3.59	0.89	1	5
Perceived ease of participation	3.46	1.02	1	5
Parental encouragement	4.17	1.02	1	5
Peer influence	3.79	1.01	1	5
Donation frequency	3.08	0.87	1	5
Reuse frequency	3.08	0.82	1	5

Note. All variables are measured on a 1–5 scale. Donation and reuse frequency categories: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always.

4.1 Sustainability Familiarity and Donation Behavior

To determine whether donation frequency differed across sustainability familiarity groups, a one-way ANOVA was conducted. The findings revealed a statistically significant difference in donation frequency across familiarity groups, $F(4, 98) = 3.85$, $p = .006$, $\eta^2 = .14$. The magnitude of effect is considered to be strong ($\eta^2 = .14$), meaning that around 14 percent of variance in donating is explained by the level of sustainability familiarity. Group sizes were as follows: Never donated ($n = 6$), Rarely ($n = 15$), Sometimes ($n = 49$), Often ($n = 31$), Always ($n = 2$). The post-hoc Bonferroni test revealed that students who stated they never donated differed significantly from those who donated often.

Table 3: ANOVA Results: Sustainability Familiarity and Donation Frequency

Source	SS	df	MS	F	p
Between Groups	10.71	4	2.68	3.85	.006
Within Groups	68.05	98	0.69		
Total	78.76	102			

4.2 Environmental Identity and Donation Behavior

The second one-way ANOVA tested whether donation frequency differed across levels of environmental self-identity. The analysis yielded a statistically significant group difference, $F(4, 98) = 3.13$, $p = .018$. The size of the effect is considered to be medium-to-large ($\eta^2 = .11$), implying that environmental identity accounted for roughly 11% of the variance. Individuals with high levels of environmental identity were associated with significantly higher donation frequencies compared to individuals with lower levels of environmental identity.

Table 4: ANOVA Results: Environmental Identity and Donation Frequency

Source	SS	df	MS	F	p
Between Groups	9.17	4	2.29	3.13	.018
Within Groups	71.70	98	0.73		
Total	80.87	102			

4.3 Correlational Analyses

Spearman rank-order correlations were conducted to examine relationships among donation behavior, social influence, familiarity, identity, and perceived ease.

4.3.1 Donation Behavior and Social Influence

The results showed a moderate positive association between donating behavior and parental encouragement, $r(101) = .42$, $p < .001$, which suggests that higher levels of parental encouragement were associated with higher donation frequency. Peer influence showed a weaker but significant positive association with donation behavior, $r(101) = .26$, $p = .008$.

4.3.2 Donation Behavior and Environmental Identity

Environmental identity demonstrated a moderate positive association with donation behavior, $r(101) = .31$, $p = .001$.

4.3.3 Familiarity and Sustainable Behavior

Familiarity with sustainability was positively associated with donation frequency, $r(101) = .27$, $p = .005$, and reuse behavior, $r(101) = .21$, $p = .033$.

4.3.4 Perceived Ease and Sustainable Behavior

Perceived ease of donation or reuse showed the largest bivariate correlation with donation behavior among the variables examined, $r(101) = .44$, $p < .001$. Note, however, that the confidence intervals for perceived ease [0.26, 0.59] and parental encouragement [0.24, 0.58] overlap almost completely, meaning the ordering of these two coefficients is not statistically established. Perceived ease was also positively associated with reuse behavior, $r(101) = .27$, $p = .006$.

Table 5: Spearman Correlation Matrix

Variables	r	p	95% CI
Donation & Parental Influence	.42	< .001	[0.24, 0.58]
Donation & Peer Influence	.26	.008	[0.07, 0.44]
Donation & Environmental Identity	.31	.001	[0.12, 0.48]
Donation & Familiarity	.27	.005	[0.08, 0.45]
Donation & Ease	.44	< .001	[0.26, 0.59]
Reuse & Familiarity	.21	.033	[0.02, 0.39]
Reuse & Ease	.27	.006	[0.08, 0.44]

Note. Because perceived ease [0.26, 0.59] and parental encouragement [0.24, 0.58] have overlapping 95% confidence intervals, the difference between these coefficients should not be interpreted as statistically established. Future multivariate analyses are needed to disentangle their relative contributions.

4.4 Qualitative Findings

Themes that emerged from thematic analysis of the adolescents' donation and reuse experiences were identified. Of the 103 participants, all had responses to the six open-ended questions, with about 200

substantive qualitative responses remaining after excluding non-substantive answers (e.g., "N/A," "-"). Codes were developed inductively and were combined into five themes.

Issues of access and convenience were important reason for participation. Students expressed that there are donation centres that are easily accessible and the process of donation is hassle-free and requires minimal effort. One participant commented, for instance: "Most important is convenience, the amount of effort I put in donating should be near to the amount of effort I need to take to dispose of my things. One said further, "Donation would be more attractive if genuine places to give are more easily available.

A second theme of transparency and visible impact arose. A number of students said that they were more likely to give if they saw the impact of their gift. One participant stated that viewing the impact of my giving would motivate him/her. Another added: "It makes me feel better when I get messages saying how my donation is making a difference in the lives of kids, like 'Your donation helped a kid.

Several participants noted that incentives and gamification could be a motivator. One person commented, "I had this program in my school, 'Jump Rope for Heart', and it would take donations and you'd get these little keychains and as a little kid it really motivated me. Others reported certificates, competitions and points systems as being desirable.

Parental encouragement was also significant. Parents and peers being observed was a motivator for participants to adopt sustainable behaviours. One student commented: "My parents promote the giving and re-using of things."

Some barriers to participation were time, inconvenience, emotional attachment to possessions, consumerist preferences on new products, and mistrust of the donation systems. For instance: "It's hard to tell which organisations are truly in need of the donation and which ones are solely trying to make money." Another mentioned, "Most students are busy with school, tuition, other extracurriculars, and social life, and giving is an added chore."

The qualitative findings were consistent with the quantitative results and confirmed that factors related to accessibility, convenience, transparency, and meaningful engagement are important factors influencing adolescents' sustainable behaviors.

5. DISCUSSION

The present study focused on the psychological, social and situational factors associated with sustainable behavior among adolescents in urban Bengaluru, India, specifically with regard to the practice of donating and re-using. The results indicate how environmental awareness, environmental identity, social influence, and structural accessibility relate to sustainable behaviors among adolescents. Among these variables, perceived ease of participation showed the largest bivariate correlation with donating behavior, and was also associated with reuse behavior. This finding indicates that besides environmental awareness, structural and contextual factors may have a powerful association with sustainable participation.

While adolescents can have positive attitudes towards sustainability, sustainable actions are not as likely to happen when participation is viewed as inconvenient, inaccessible, and time-consuming. The results support previous studies highlighting the importance of decreasing the effort required to perform a behavior while making it more convenient to do so in order to encourage environmentally responsible actions (Guagnano et al., 1995; Ahmad et al., 2023). Likewise, the field of behavioral economics literature indicates that people are more inclined to engage in behaviours with low cognitive and physical effort, especially in repetitive decision making situations (Thaler & Sunstein, 2008).

The results also add to the sustainability research literature on the "attitude-behaviour gap." Research conducted previously has found that there is a gap between environmental concern and actual behaviour with positive attitudes towards sustainability (ElHaffar et al., 2020; Kollmuss & Agyeman, 2002). The present study echoes this claim by showing that having a knowledge of what is sustainable and a feeling of concern for the environment are not sufficient on their own when there is a lack of systems accessibility, time, and convenience. This is especially significant in the school environment because school sustainability programs tend to focus on raising awareness and not adequately tackling structural barriers to participation. The results indicate that, in addition to raising environmental concerns among adolescents, systems must be established that allow them to participate in sustainable behaviors in a practical, accessible and routine manner.

Another key factor associated with sustainable behaviour was environmental self-identity (ESI). Adolescents' donation frequency was significantly higher among those who reported a stronger environmental self-identity. This result corroborates earlier research indicating that ESI is a relevant motivational phenomenon for sustaining pro-environmental behavior (Whitmarsh & O'Neill, 2010; Van der Werff et al., 2014). In terms of Self-Determination Theory, behaviours are more likely to last longer when they are self-directed and congruent with personal values and identity (Ryan & Deci, 2000). The adolescent period is a developmental phase where identity formation and autonomy are important, and where environmental identity is an important factor to understand in relation to sustainable behaviour. The results indicate that if a young person internalises sustainability as part of his/her identity, his/her likelihood to adopt environmentally responsible actions, beyond obligatory requirements from an institution or external pressure, may increase. It is noteworthy, however, that perceived ease of participation showed a larger bivariate correlation with donation than did environmental self-identity, suggesting that internal motivation may not always be sufficient to overcome structural barriers.

Another factor that proved to be important for adolescents' sustainable behavior was social influence. Interestingly, parental encouragement was more strongly associated with donating behaviour than was peer influence. Adolescent age is often perceived as a time of increased conformity to peers and peer pressure, but the results suggest that household norms and parental practices remain important correlates of sustainability-related behaviors in adolescents. Previous studies also seem to indicate that the values that adolescents acquire are to a large extent related to parental modelling, communication and reinforcement of environmentally responsible behaviour in the home environment (Matthies et al., 2012; Grønhøj & Thøgersen, 2012). It should be noted, however, that the stronger association of parental influence could reflect parents' role as logistical gatekeepers — adolescents often rely on parents for

transport to donation centres and for decisions about household possessions — rather than (or in addition to) value transmission per se. The present data cannot distinguish between these two mechanisms. Peer influence also showed a positive association with sustainable behavior, but this association was comparatively weaker. This finding adds to the body of research indicating that family-based interventions could be especially useful for promoting sustained participation with adolescents.

The qualitative findings offered a better understanding of the mechanisms involved in adolescents' sustainable behavior and largely corroborated the quantitative findings. Convenience and accessibility was mentioned several times as an important factor related to participation. Students repeatedly highlighted the need for having donation centres made readily available, donation processes being more efficient and less hard work being involved to participate in sustainability efforts. The findings are in line with the Theory of Planned Behavior (TPB) in which perceived behavioral control plays a crucial role in the prediction of environmentally responsible behavior (Ajzen, 1991). Adolescents were more likely to do sustainable actions when they thought it would be easy to do them in their routine. This underlines the need for thinking about institutional design as a means to encourage sustainability behavior. This means that schools can also look at implementing donation drives, recycling centres and reusing items in school, alongside voluntary external participation in school sustainability programs.

Another key finding is that transparency and the visibility of impact are relevant to promote sustainable behaviour. When participants were given the opportunity to see the impact of their donations on others, they were more likely to make a donation. This discovery indicates that emotional involvement and perceived effectiveness are psychological factors in adolescent involvement in sustainable initiatives. The literature also suggests that prosocial behavior is greater if it is visible and salient in terms of emotion (Small & Loewenstein, 2003; Cryder et al., 2013). When sustainability efforts demonstrate measurable results and make sustainability actions relevant to the real world, it can inspire adolescents to take action. This has implications for sustainability education in that programs focusing on emotional attachment and social responsibility might have a greater effect than solely information-based programs.

The results also showed that rewarding, competing, and gamified sustainability activities can boost adolescent engagement. Participants mentioned that they found certificates and competitions to be motivating and fun, suggesting that gamification can improve participation by making it more novel, fun, and social. These results are in line with previous studies which showed that game-based intervention is a useful way to boost engagement in an educational and environmental setting (Hamari et al., 2014). The findings should be interpreted, however, in the light of Self-Determination Theory, which warns of the long-term negative effects of relying too heavily on external incentives on intrinsic motivation (Ryan & Deci, 2000). Therefore, incentives and gamification can play a role in creating a culture of sustainable participation in the short term, but, in the long term, sustainability programs need to focus on building environmental identity in children so they do not rely solely on external rewards.

Thematic analysis also identified several barriers for sustainable behavior. Some of the most common answers were that it was not convenient, that it was time constrained, that attachments to belongings, consumerist attitudes to new products and that they didn't trust the donation system. These barriers can be understood in terms of wider social trends around material consumption and consumer culture, in

particular the urban context where consumerism is becoming more prevalent and consumer products more accessible (Jackson, 2005). In addition, the mistrust in the donation systems underscores the importance of transparency, communication, and accountability in institutions in sustainability projects.

There are some limitations to the present study. First, the study employed a convenience sampling technique, and only included adolescents residing in urban Bengaluru, India, which makes the generalisability of study results difficult. Second, because of the cross-sectional design, causal inferences are not possible with regard to how the variables are related; for instance, donating can strengthen environmental identity, but not necessarily the other way around, and household resources may at the same time influence both the ease of donating and parental encouragement. Thirdly, there may have been socially desirable responses, with participants perhaps reporting their pro-ecological attitudes and behaviours in an exaggerated manner (Fisher, 1993). Fourth, single items were used to measure all constructs, resulting in a limitation in reliability assessment and precision. Fifth, the study was limited to the act of donating and reusing behaviour, while other sustainable behaviours like transportation, food or energy consumption were not explored.

Larger and more diverse samples of students from varied socioeconomic, geographic, and cultural backgrounds should be used to enhance external validity in future research. Longitudinal research would help to better understand temporal processes of change in environmental identity and sustainable behaviours in adolescence. Importantly, future work should include a multivariate model (such as ordinal logistic regression) to adjudicate the relative contributions of ease, parental influence, environmental identity, and familiarity to donation frequency, rather than relying solely on bivariate comparisons. Experimental studies dedicated to accessibility-oriented interventions, school-based sustainable actions, and gamified programs would bring practical knowledge on effective approaches to the promotion of sustainable behaviour among teenagers.

6. CONCLUSION

The present study explored the psychological, social, and contextual factors associated with sustainable behaviours among youth in an educational setting located in urban Bengaluru, India. Findings revealed that both environmental identity and sustainability awareness were positively associated with donation and reuse behaviours, while perceived ease of participation showed the largest bivariate correlation with sustainable behaviours. These results indicate that although adolescents have positive environmental attitudes and values, they are more likely to demonstrate sustainable behaviours when they perceive that they can participate conveniently, easily, and as part of their everyday routines. The study also found social influence to be important, as parental support showed a stronger association with donation than peer influence, though the two confidence intervals overlap and this ordering should be treated cautiously. In addition, the qualitative findings identified convenience, visible impact, and gamification as primary motivators of adolescent sustainable behaviour, while constrained time, inaccessibility, emotional attachments to possessions, consumeristic values, and mistrust in donation systems were important barriers to participation.

These findings have important implications for schools and educational institutions attempting to promote sustainable behaviours of adolescents. Schools should prioritize accessibility, institutional support, and meaningful involvement over awareness campaigns when developing sustainability interventions. Schools can promote sustainable participation by integrating donation drives, reuse initiatives, and environmentally responsible behaviours into students' everyday environments.

Also, in order to encourage long-term commitment to behaviour, sustainability programmes need to enhance individuals' sense of environmental identity and make the social impact of sustainable behaviours visible. In addition, the incorporation of gamification and competitive activities with reward systems into programmes can promote participation when used together with strategies designed to enhance intrinsic motivation and values-based pro-environmental behaviour. Overall, this study provides support for the expanding literature on adolescents and sustainability behaviours by evidencing that successful sustainability promotion requires the combination of psychological, social, and structural methods.

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