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Carys Doyle

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Investigating the Attitude-Behaviour Gap in Adolescent Plastic Consumption

Carys Doyle

Abstract : Since the mass production of plastic products began in the 1950s, it has been estimated that more than 6.9 billion metric tonnes of produced plastic have ended up in landfills and damaged ecosystems (Walker, 2021). Though there has been an increase in research surrounding the Green Gap - the difference between an individual's environmental values and their actual environmental behaviour - most studies ignore which attitudes and behaviours cause a decrease in plastic usage and instead focus on which behaviours and attitudes lead to the proper recycling of plastic products. Though there is an overlap between the environmental values that cause the proper recycling of plastic products and those that lead to a decrease in plastic usage, they are not the same and the conclusions drawn from one aspect of the Green Gap cannot be applied entirely to another (Barr, 2006). Additionally, such studies focus on adult participants, and neglect adolescents. However, Baludné et al. (2020) assert that understanding and researching the environmental values of adolescents, or society's future generation of consumers, is becoming increasingly important as we face a multitude of environmental issues such as climate change and environmental degradation. As a result, the present study intends to research the attitude-behaviour gap of plastic consumption among Canadian adolescents through a mixed-method approach. The study surveyed 41 participants to determine which social and familial factors most influence this attitude-behaviour gap. The results of this study indicate that there is an attitude-behaviour gap in adolescent plastic consumption and that the environmental values of an adolescent are more developed by the environmental values of their family members, causing social factors (such as the presence of peers) to act as situational factors to their attitude-behaviour gap.

Investigating the Attitude-Behaviour Gap in Adolescent Plastic Consumption

Since the 1950s, when the mass production of plastic products first began, it has been estimated that 9.2 billion metric tonnes of plastic have been produced, with more than 6.9 billion metric tonnes ending up in landfills or leaking into and damaging ecosystems (Walker, 2021). Despite Canada's reliance on plastic products and packaging, only 9% of plastic is properly recycled in Canada, creating detrimental impacts such as environmental degradation (Government of

Canada, 2020). As a result, Baludné et al. (2020) assert that understanding and researching the environmental values of adolescents, society's future generation of consumers, is becoming increasingly important due to the multitude of increasing environmental issues such as climate change, environmental degradation, and biodiversity loss. While these assertions are valid, the significance of the Green Gap must also be considered. The Green Gap refers to the difference between the environmental values of an individual and their environmentally supportive behaviour, which are actions taken to promote environmental sustainability (Schmitt, 2021). Though the Green Gap is relatively under-researched, most studies conducted on the Green Gap fail to investigate consumer plastic usage

and instead focus on behaviours and attitudes that lead to the proper recycling of plastic products. Although there is an overlap between the environmental values that cause the proper recycling of plastic products and those that lead to a decrease in plastic usage, they are not the same and the conclusions drawn from one aspect of the Green Gap cannot be applied entirely to another (Barr, 2006). Instead, understanding which factors contribute to the development of adolescent environmental values and which situational variables most cause this gap is integral to decreasing plastic consumption and finding ways to encourage environmentally supportive behaviour in adolescents. As a result, the present study intended to research the attitude-behaviour gap of adolescent plastic consumption, and which social and familial factors most influence this gap.

Literature Review

Understanding the Green Gap

Since the early 2000s, various researchers, such as Kennedy et al. (2009) and Temizkan (2022), have investigated the attitude-behaviour gap of plastic consumption. For example, a meta-analysis conducted by Heidbreder et al. (2019) studied scholarly journals on plastic consumption and the attitude-behaviour gap published up to September 2018. The study concluded that although recycling behaviour is well documented and studied, the specific behaviour of plastic avoidance is not. Moreover, in studies specifically addressing recycling behaviour, and looking more broadly at the Green Gap, plastic usage is rarely mentioned. In research that addresses the attitude-behaviour gap of plastic consumption, the quality of those studies varies significantly (Heidbreder et al., 2019). However, in studies that research the Green Gap, two main drivers of the gap are evident: environmental values and situational variables/contextual factors.

Environmental values include an individual's environmental education and environmental concern (Kennedy et al., 2009). Environmental values are also influenced by familial/household variables. Meyer et al. (2021) found that the Green Gap between individuals and families is affected by the eating habits and other environmental values of those they live with.

Similarly, Kennedy et al. (2009) determined that 25% of respondents felt constrained in developing environmentally supportive behaviour as a result of a lack of support from household members. However, Barr (2006) disagreed and determined that individuals with developed environmental values will alter their behaviours, whereas those who want to appease their family/household/society will not. Though Barr's conclusions do not encompass the many other factors that encourage buying behaviour and the Green Gap, they may be true in some situations. Additionally, a study by Roy et al. (2022) argued that a lack of environmental education, which influences environmental values, plays a significant role in the attitude-behaviour gap in plastic consumption. However, a separate study by Kennedy et al. (2009) determined that though environmental education is an important aspect of shrinking the Green Gap, the information taught must be carefully selected as an "abundance of contradictory information can play a significant role in limiting ESB [environmentally supportive behaviour]" (Kennedy et al., 2009, p. 154).

Situational variables are variables that disrupt the intended buying behaviour of an individual. This includes price, convenience, time, and social variables (Meyer et al., 2022). Environmentally friendly products tend to be more expensive and are therefore less accessible for many citizens. As a result, consumers are less likely to purchase these more environmentally sustainable products, while also developing a lack of confidence in the products' abilities (Temizkan, 2022). However, Walker et al. (2021) found that younger consumers were more willing to pay for more expensive environmentally sustainable products.

Therefore, there appears to be a discontinuity among buying behaviours; consumers prefer not to buy more expensive environmentally friendly products but will instead spend a smaller amount of money (which will add up to a significant amount over time) to purchase objects like plastic bags. An additional aspect of situational variables is convenience/time. Walker et al. (2021) determined that though Canadians show developed environmental values, their buying behaviours show a strong correlation between convenience and the food products they purchase, regardless of packaging. Similarly, Kennedy et al. found that lack of time was a restraint on environmentally sustainable behaviour. For example, it takes very little

time to turn off a light switch; however, taking public transit or properly recycling a product can be more time-consuming.

Plastic Consumption and the Attitude-Behaviour Gap

As mentioned previously, understanding the Green Gap surrounding plastic consumption is relatively under-researched despite the increasing awareness and concern of consumers in regard to the effect of plastics on the environment. Walker et al. (2021) determined that 73.4% of respondents supported the government's decision to ban single-use plastics for food packaging; however, these same participants have continued to use single-use plastics, thus demonstrating the attitude-behaviour gap. Similar to Green Gap research, Roy et al. (2021) and Mühlthaler et al. (2017) have demonstrated that two factors that influence the attitude-behaviour gap of plastic consumption are environmental values and situational variables. Moreover, their research did not consider the factors that affect the development of an individual's environmental values largely impacted by the environmental values of their family members and friends.

Additionally, very few studies have analyzed the attitude-behaviour gap of plastic consumption and when they do, these studies focus on the recycling aspect of these products, not the factors that influence their purchase. For example, past research has emphasized a lack of labelling, a lack of understanding of proper recycling, and a lack of accessible waste disposal as factors for the faulty recycling of participants (Barr, 2006; Norton et al, 2022; Roy et al., 2022). More specifically, studies that research the attitude-behaviour gap of plastic consumption focus only on adults or university students. For example, Temizkan (2022) studied university students and Barr (2006) studied the adult population of Exeter, England. As argued by Baludné et al. (2020), researching the attitude-behaviour gap of adolescent plastic usage is incredibly important as adolescents are society's future consumers, and they have the ability to alter consumerism and encourage it to be more environmentally sustainable and innovative. Therefore, understanding which factors affect the development of environmental values of adolescents (specifically familial and social factors) and encourage both unsustainable and sustainable

behaviour is integral to increasing adolescent environmentally sustainable behaviour, and subsequently decreasing environmental degradation.

The present study aims to extend the current understanding of the attitude-behaviour gap of plastic usage in relation to the environmental values and consumption behaviours of adolescents by understanding which social and familial factors most influence the attitude-behaviour gap of adolescent plastic consumption. Examples of social and familial factors include the environmental education and environmental values of an adolescent in comparison to those of their peers/friends and family members. This increased understanding could provide insight into the influence of environmental values and situational variables in relation to the environmental values of family members and peers on the attitude-behaviour gap of adolescents and help governments and environmental organizations improve the accessibility of environmentally friendly products and encourage environmentally supportive behaviour among adolescents.

Method

Apparatus and Study Design

To explore the attitude-behaviour gap of adolescent plastic consumption and determine which social and familial factors most influence this gap, an online survey containing both closed and open-ended questions was created to collect both quantitative and qualitative data. Existing research investigating the Green Gap has most commonly used online surveys to collect quantitative data such as Barr (2006), Norton et al. (2022), Mühlthaler (2017), and Temizkan (2022). Additionally, researchers such as Kennedy et al. (2009) combined both qualitative and quantitative approaches in their survey.

The majority of the survey questions were modelled on Kennedy et al.'s 2009 study as well as the Environmental Portrait Value Questionnaire (E-PVQ) based on Schwartz's Portrait Value Questionnaire. Like the work of Norton et al. (2022) and Temizkan (2022), the survey used a series of Likert Scale questions, asking participants to rate each statement between 1 and 5 with 1 being "I completely disagree" and 5 being "I

completely agree”; for example, “I feel pressure from family members to live a less environmentally friendly lifestyle.” Additionally, certain statements required multiple choice answers, such as, “Which strategy (if any) do you most often use to lower your plastic consumption?” In order to increase the validity of the responses to this question, participants were then asked to rate how often they use these techniques with answer options ranging from “Very Often (10/10 times I go shopping)” to “Rarely (4/10 times I go shopping)” to “Never”.

Additionally, the survey contained open-ended questions for participants to complete, asking them to reflect on their environmental behaviour and those of their family and friends, such as “In what ways do your family’s actions show their understanding of environmentally sustainable living?” Inspired by the ethnographic approach of Meyer et al. (2022), the survey also included “situational questions” asking participants to reflect on their choice of action in a given scenario on the topic of plastic usage providing insights into their practice of using plastic instead of their potentially biased self-reported values. This approach allows for the discovery of causative factors of habits and leads to accurate explanations for behaviour (Naidoo, 2012). The combination of qualitative and quantitative data will help validate research findings and strengthen the determined themes (Heale & Forbes, 2013). Please see the Appendix for the full questionnaire used.

After receiving approval from the Internal Review Board at the researcher’s host institution, the online survey was sent to the Administration of four high schools in urban locations in Ontario, Canada for distribution to their student populations aged 16 and over. Prior to completing the online survey, participants were asked to complete a consent form and were reminded of their rights as a participant. Participation in this study was voluntary, therefore not all students aged 16 and over in the sampled high schools completed the survey.

Data Analysis

In order to analyze the quantitative data collected, descriptive statistics (mean, median, mode, standard deviation, and variation) were used to compare the impacts of the environmental values of friends and

family on the reported environmental values of the individual/participant. For example, the responses of participants to questions such as “I feel pressure from family members to live a less environmentally friendly lifestyle” and their self-reported environmental values were compared. Responses to questions such as “are you aware that only 9% of plastic in Canada is properly recycled?” were then used to situate the environmental understanding of participants. Qualitative data was analyzed using an open/inductive coding approach to thematically analyze participant responses to the open-ended survey questions. The nature of an open-coding approach allowed for flexibility in determining themes and codes and the emergence of unexpected themes (Khandkar, n.d.). Additionally, such an approach enhances the validity of the analysis because the determined themes and codes are built directly from the raw data (Khandkar, n.d.).

Results

There were a total of 41 responses to the questionnaire. Qualitative and quantitative results were analyzed using the Attitude-Behaviour Context model, which asserts that attitude alone does not affect behaviour (such as environmental values) but that contextual factors also influence an individual’s behaviour (Guagnano et al., 2010). This model is supported by the results of Temzankan (2022) and Kennedy et al. (2009) who determined that the Green Gap, or more widely the attitude-behaviour gap of plastic consumption, is affected by environmental values (attitude) and situational variables (context).

Individual Environmental Values

When reflecting on their own environmental values and actions, participants used environmentally supportive behaviours such as reducing, reusing, and recycling their plastic products, while also working to educate others on the topic of environmental sustainability. Though many participants mentioned a “zero waste lifestyle” being the most effective environmentally sustainable lifestyle, they felt it was unattainable for the average citizen. Similar to the results of Thomas et al. (2022), participants felt that living an environmentally sustainable lifestyle—aside from a

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“zero waste lifestyle”—is not possible for themselves or their families due to the higher prices, lower accessibility and availability of non-plastic products, and the inability to encourage systemic or structural change. However, 42% answered that lowering their plastic consumption was a priority.

Additionally, many participants felt that meaningful climate action can only be taken by large corporations and governments, causing participants to more often support environmentally sustainable companies

and political parties in favour of environmental sustainability. However, this did not stop participants from completing what they referred to as “the little things”—eating less red meat, reducing plastic consumption, reducing water and electricity usage, etc.—as a form of climate action in the hopes they will accumulate to have a larger impact. Moreover, 45% of respondents answered that partaking in climate action was important to them (mean: $x = 3.23$, $s = 1.2$); however, similar to the qualitative data responses,

Table 1: Themes Determined From Participant’s Definition of an Environmentally Sustainable Lifestyle

Themes	Supporting Codes	Definition
Preventing Plastic Waste	Reducing plastic waste and food waste Using reusable products Using renewable resources Protecting existing ecosystems	Actions takings to reduce plastic consumption and prevent plastic waste
Limit to individual Impact	Feelings that complete environmental sustainability or net zero lifestyles is not feasible for the everyday citizen Economic limitations (cost of more environmentally sustainable products) Lack of accessibility and availability of environmentally sustainable products Feelings that Governments and large corporations have a larger say/will have larger environmental impacts than the individual	Factors that hinder the environmental impact of participants, including socio-economic and political factors
Other forms of Action	Educating yourself and others/being aware of your environmental impact Developing small environmental habits that will slowly add up to something bigger Eating less red meat Who they vote into power	Included other forms of environmentally supportive behaviour taken by participants that were outside of preventing plastic waste. More generally this theme refers to participant responses who answered “forms of climate action” as part of their environmental values but never stated how they enact it

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there was a high variance in results ($s^2 = 1.4$).

Note: The numerical data corresponds to participant responses to Likert Scale questions, with one being “I completely disagree” and 5 being “I completely agree”.

Table 2: Descriptive Statistics of the Collected Quantitative Data

Question	n	Mean	Median	Mode	Standard Deviation	Variance	Coefficient of Variation
I feel pressure from family members to live a less environmentally friendly lifestyle	41	2.3	2	2, 1	1.049	1.101	0.4626
I feel pressure from family members to live a more environmentally friendly lifestyle	41	2.7	3	3	1.0	1.0	0.37
I feel pressure from friends to live a less environmentally friendly lifestyle	41	2.2	2	1	1.1	1.2	0.51
I feel pressure from friends to live a more environmentally friendly lifestyle	40	2.5	3	3	1.1	1.2	0.43
Protecting the Environment is a priority of mine	41	2.8	3	3	0.91	0.83	0.33
Lowering my plastic consumption is a priority of mine	41	2.4	2	3	0.81	0.65	0.33
Partaking in climate action is important to me	41	3.5	4	4	1.0	1.0	0.30
When buying a coffee in a non-reusable plastic cup, I am concerned by the amount of plastic my order will create	41	2.4	2	3	0.94	0.89	0.40

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Environmental Values of Family Members

When reflecting on the environmental values and actions of their families, participants' responses centred around three themes. When discussing the environmental actions taken by their family members, the most common form of environmentally supportive behaviour was reducing, reusing, and recycling plastic products. Secondly, participants noted the steps their family took toward climate action as reducing greenhouse gas emissions, supporting environmentally sustainable companies, and growing their food. The most common form of environmental action was decreasing greenhouse gas emissions, educating themselves and others on the topic of environmental protection, and developing a more environmentally sustainable

diet, whereas actions such as growing their food and planting trees were cited less frequently. Some participants also felt that their families had little to no environmental values due to a lack of environmental education. When asked if they feel pressure from family members to live a less environmentally sustainable lifestyle, the mean participant response was $x = 2.3$, which means that participants feel low pressure from family members to live less environmentally sustainable lifestyles, whereas when they feel pressure from family members to live more environmentally sustainable lifestyles, the mean response was $x = 2.7$. This indicates that participants feel more pressure from family members to live more environmentally sustainable lifestyles than they do to live less environmentally sustainable lifestyles. However, in general, they feel little

Table 3: Overall Themes of Family Member Environmental Values

Final Themes	Supporting Codes	Definition
Preventing Plastic Waste	Reducing waste through reusable shopping bags, plastic water bottles, reusable lunch containers, going thrift shopping/buying clothing second hand	Actions taken by participant family members to reduce plastic consumption and prevent plastic waste
	Properly recycling plastic products	
	Reducing plastic waste and food waste	
Taking Action	Reusing plastic bags and other plastic products	Forms of Environmental Action taken by Participant family members excluding plastic usage
	Educating themselves and others on the topic of environmental sustainability	
	Supporting environmentally sustainable companies	
	Reducing Greenhouse gas emissions by taking the public transit, biking, or walking	
No actions	Eating less red meat	Limited to no environmental action of participant family members
	Growing own food	
	Not educated on the topic of environmental sustainability	
	Environmental action is not a priority	

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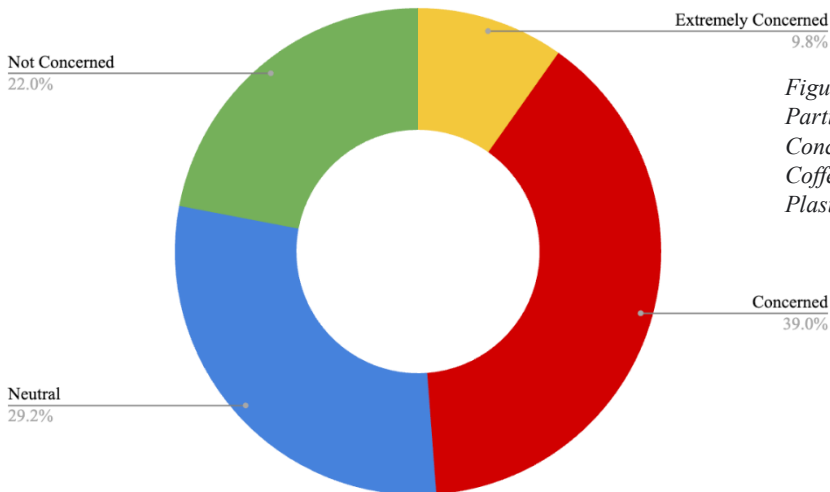
pressure to act either way with low variation amongst results ($s^2_{\text{less pressure}} = 1.1$ and $s^2_{\text{more pressure}} = 1.0$ respectively).

Environmental Values of Friends

The greatest contrast between responses occurred when participants reflected on the environmental values and actions of their friends. Though participants shared that their friends use reusable water bottles and lunch containers, many felt their friends and peers demonstrated weak or underdeveloped environmental values. An example of this would be participants referencing students who incorrectly sort their plastic waste, or others that purposefully use single-use plastic cutlery from the school cafeteria, so they do not have to return their reusable cutlery to the cafeteria after eating. Most notably, participants felt that the environmental values of their friends and peers aligned with what was most “mainstream” at the time. For example, participants compared the environmental actions of their friends in response to the growing concerns of fast fashion on social media or their increased environmental awareness and care when environmental activist Greta Thunberg rose to fame. Additionally, participants felt their friends were more likely to use single-use cutlery or buy from a fast fashion brand than go thrift shopping or use reusable cutlery. In contrast, some participants felt that their

friends did demonstrate environmentally supportive behaviour such as using reusable products and properly sorting waste, saying that they and their friends discuss environmental sustainability to educate each other.

When environmentally supportive behaviours were not demonstrated or peers did not discuss environmental sustainability with one another, participants felt unsure of the environmental values of their peers. The lack of in-person conversation surrounding climate change between friends and peers is also visible in the quantitative data collected. For example, 37% of participants said they and their friends discuss environmental sustainability once every month and 15% reported they never did. These results are similar to the findings of Thomas et al. (2022), whose participants also felt environmental action is rarely discussed amongst peers, and when discussed, participants felt these conversations and other environmental actions were inconsistently supported or more of a fad for other adolescents. When comparing these results to participant responses to the question “I feel pressure from friends to live less environmentally sustainable lifestyles” the mean response was $x = 2.2$, indicating that participants feel low pressures from their peers, with a low variation amongst results ($CV = 0.51$). Similarly, participants indicated that they also felt low pressure from friends to live a more environmentally



*Figure 1
Participant Levels of
Concern When Buying
Coffee in a Non-Reusable
Plastic Cup*

sustainable lifestyle, with again low variation amongst results ($CV = 0.43$, $x = 2.5$, $s = 1.1$).

Moreover, when comparing participant responses to their levels of concern when using a non-reusable plastic cup, 39% of participants answered they were concerned by the amount of plastic waste they will create. However, this does not align with the 88% of participants who said they would not return to collect their reusable cups in the event they forgot them when going to buy coffee. When asked whether their family members would mind how each participant reacted to this situation (whether or not they return to collect their reusable coffee cup), 72% of participants said their parents would have no preference as to how they responded to this situation while 28% said their parents would ask them to retrieve their reusable cup before continuing.

Discussion

This research attempted to understand two inquiries. The first was to determine if there is an attitude-behaviour gap in adolescent plastic consumption, and the second was to determine the relative impact of social and familial factors on this gap. From this research, three key findings have emerged. Firstly, that there is an attitude-behaviour gap regarding adolescent plastic consumption. The second key finding is that participants feel relatively low pressure from friends and family members to live more or less environmentally friendly lifestyles. Finally, the environmental values of an individual tend to be developed more by family members than friends, causing the environmental values of friends/social factors to act as situational variables/contextual factors to the behaviour of adolescents.

Environmental Pressure from Family Members

Quantitative responses of participants again demonstrated that they feel little to no pressure from family members to live more or less environmentally sustainable lifestyles (mean responses: $x = 2.7$, $x = 2.3$). Similar to the environmental pressure participants

feel from friends, participants indicated they feel more pressure to live more environmentally sustainable lifestyles from family members than they do to live less environmentally sustainable lifestyles. Moreover, participant responses surrounding the environmental values and the environmental values of their family members, when thematically coded, had a large overlap of values and actions taken to encourage environmentally supportive behaviour.

Most importantly, family members of private school adolescents appear to be working to educate their children on the topic of climate change and climate action through family discussions and their chosen lifestyles. For example, 9.8% of participants said they and their family never discuss environmental sustainability, whereas 15% of participants said they and their friends never discuss environmental sustainability. This indicates the importance of dialogue on developing environmentally sustainable values, as adolescents had environmental values more similar to those of their family members, with whom on average they discussed environmental sustainability more, than their peers. According to Stevenson et al. (2016), these increased conversations on the topic of climate change and environmental sustainability, even with high levels of skepticism, still lead to an increased level of climate concern, in line with the importance of dialogue present within participant responses. Further, when asked to define their idea of an environmentally sustainable lifestyle, participant responses demonstrated values similar to those of their family members. These include codes such as reducing waste (plastic, food waste, etc.), educating themselves and others, as well as reducing meat consumption. For example, participants stated that they and their family take public transit and walk as a form of transportation to decrease the greenhouse gas emissions their family creates, while others said that their family gardens/grows their food as a way of decreasing their environmental impact, and work to decrease their environmental impact through initiatives such as “meatless Mondays.” As a result, it appears that the environmental values of a family member are the largest determinant of an adolescent’s environmental values and lifestyle by instilling lifelong habits and values. This conclusion is similar to the results of Stevenson et al. (2016), who determined that discussions with family members surrounding the topic of

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climate change were more impactful and important to the adolescent than discussions with their peers on the same topic. Moreover, Stevenson et al. (2016) suggests that parents are the most influential factor in shaping the worldview of their children. Similarly, Mead et al. (2012) and Ojala (2013) determined that adolescent environmental values are most similar to those of their parents even in a time of adolescence when participants are still defining and shaping their values.

Environmental Pressure From Friends and Social Situational Variables

Though 39% of participants answered that they were concerned by the amount of waste they would create when using a single-use plastic coffee cup and

37% of participants said their environmental values included reducing their plastic waste, 88% of participants determined that they would not turn around to retrieve their reusable cup in the event they forgot it when going to buy coffee with their friends. Not only does this signify an attitude-behaviour gap in adolescent plastic consumption, but it also suggests that social factors, such as Peer Group Influence, play a significant role in the attitude-behaviour gap of adolescent plastic consumption. These conclusions are supported by the 54% of participants who indicated they would return to collect their reusable shopping bags in the event they forgot it when grocery shopping on their own, meaning that when comparing the two situations it appears the presence of friends is causing adolescents to act less sustainably.

These results indicate the presence of friends influ-

Table 4: Themes Determined From Participant Responses on the Environmental Actions of their Friends

General Themes	Supporting Codes	Definition
Preventing Plastic Waste	<p>Recycling properly (majority of the time)</p> <p>Using reusable products (such as water bottles, lunch containers, etc.)</p> <p>Not littering</p>	<p>Actions taken by participant's friends to reduce plastic consumption and prevent plastic waste</p>
Limited Environmental Action	<p>Environmental action is not discussed by friends/no visible environmental values of friends</p> <p>Influence of societal standards</p> <p>Eco Anxiety - ever pressing fear of climate change, students not wanting to take action because it may make them uncomfortable</p> <p>Lack of interest/environmental action is not a priority</p> <p>Influence of social media: when fast fashion was a large topic on social media thrifting became popular</p> <p>Increased levels of climate awareness when Greta Thunberg rose to fame but no increased environmental action</p>	<p>Limited to no environmental action displayed by participant friends. Participants felt that factors such as societal norms and social media cause increased concern but no increase in environmental action.</p>

ences the attitude-behaviour gap of adolescent plastic consumption, as participants are choosing to live less environmentally sustainably amongst peers, even though, relative to their responses, participants felt more pressure from both friends and family members to live more environmentally sustainably than less. Similarly, Seppälä et al. (2017) and Pfattheicher et al. (2016) determined a correlation between peer influence and the environmental behaviour of participants. More specifically, Pfattheicher et al. (2016) determined that relative levels of compassion affect the pro-environmental values of participants; this was supported by Seppälä et al. (2017) who concluded that different social situations affect the relative compassion of an individual. Therefore, according to Seppälä et al. (2017) and Pfattheicher et al. (2016), it can be concluded that social situations or Peer Group Influence affect the pro-environmental behaviour of adolescents. Similarly, based on participant responses, it appears that the influence of peers is widening the attitude-behaviour gap of adolescent plastic consumption, therefore, acting as contextual factors/situational variables to their attitude-behaviour gap, whereas family members are most influencing the environmental values of participants. A multitude of factors caused by the presence of peers could influence the attitude-behaviour gap of adolescent plastic consumption, such as societal expectations seen on social media, peer environmental values, as well as the relative time/convenience required for climate-conscious living. One reason was provided in participant responses who felt that their generation's definition of "accomplished" or the "end goal" involves higher levels of consumption as they involve higher levels of wealth and resources. It can then be inferred that though the peers of participants are not encouraging them to live more or less environmentally sustainable lifestyles, social norms, enforced by the actions of their peers, are.

However, more research is needed to affirm these trends amongst adolescents, and specifically why peers influence the attitude-behaviour gap of adolescent plastic consumption, especially because Tegethoff (2021) found that peers did not influence the environmental behaviour of adolescents, whereas researchers such as Seppälä et al. (2017) and Pfattheicher et al. (2016) did. Additionally, when asked to reflect on their environmental values or respond to situational

questions, participants reported they would purchase the more environmentally sustainable product if it was not more expensive or time-consuming. These results are similar to those of Kennedy et al. (2009), Young et al. (2009), Tsakiridou et al. (2008), and Temizakan (2022) whose studies determined that "the high price of green products [and] their low availability" is one of the "biggest barriers to buying green products" (Temizkan, 2022, p. 11). However, these conclusions have only been confirmed for adult participants experiencing an attitude-behaviour gap and further research is required to confirm these trends for adolescent participants.

Limitations

This research did not compare the responses of participants in relation to their gender. However, according to the research of Stevenson et al. (2016) and Kennedy et al. (2009), female-identifying participants were more concerned about the environment and climate change than male-identifying participants. Additionally, Koessler et al. (2022) determined that the effect of Peer Group Influence on the environmental behaviour of adolescents changes as they age. For example, in their study, older adolescents were more likely to change their behaviour to be more in line with what they deemed to be "socially acceptable" in comparison to younger adolescents who did not (Koessler et al., 2022).

Additionally, this research studied the attitude-behaviour gap of adolescents across Ontario, using 41 participants from four urban high schools in locations that were accessible to the researcher, meaning that different conclusions may be drawn if a more diverse or larger participant pool was used. As a result, the conclusions drawn from this study may not accurately represent the attitude-behaviour gap of adolescents in different environments within Canada or other countries. It is also recommended that an ethnographic approach be used in further research to decrease the social desirability bias of participant responses, such as that of Meyer et al.'s 2021 study to further understand the impacts and implications of friends and peers as contextual factors on the attitude-behaviour gap of adolescents.

Conclusion

This study contributes to the current research and understanding of the attitude-behaviour gap of plastic consumption and its relation to adolescent behaviour. However, a lack of research on the attitude-behaviour gap of adolescent plastic consumption, or more broadly the Green Gap, remains. Such research is vital because adolescents are society's next generation of consumers, voters, and activists and their values and behaviours have the ability to shape the nature of societal environmentally supportive behaviour. This study confirmed that an attitude-behaviour gap exists in adolescent plastic consumption, and also determined that adolescents feel relatively low pressure from friends and family members to live more or less environmentally-friendly lifestyles. Additionally, the results of this study indicate that the environmental values of adolescents are developed more by family members than friends, causing the environmental values of friends/social factors to act as situational variables to the behaviour of adolescents (such as the time or cost of a more environmentally sustainable product). This indicates the importance of familial values on the developing environmental values of adolescents, and trends within participant qualitative responses indicate the importance of dialogue amongst peers and family members to increase environmental awareness and share environmental values. Moreover, participant responses demonstrate that adolescents feel pressure from society to live more environmentally sustainable lifestyles. As a result, it is recommended that additional research be conducted to better understand this trend amongst participant responses, or research working to confirm the results of this study and better understand the effect of Peer Group Influence on the attitude-behaviour gap of adolescents and why the presence of friends or peers can alter the environmentally supportive behaviour of an adolescent with strong environmental values. The attitude-behaviour gap of adolescent plastic consumption is not only visible but also has detrimental effects on our environment, and as a result, continued research on the attitude-behaviour gap of adolescent plastic consumption can greatly help encourage more frequent environmentally supportive behaviour.

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Appendix

Survey Questions

Quantitative Likert Scale Questions
1 = I disagree completely, 5 = I completely agree
<p>Protecting the environment is a high priority of mine</p> <p>Lowering my plastic consumption is a high priority of mine</p> <p>Partaking in climate action is important to me, and I actively partake in environmental action</p> <p>When placing an order for takeout, to be packaged in plastic, I am extremely concerned about the amount of plastic waste my order will create</p> <p>When buying a coffee in a non-reusable plastic cup, I am extremely concerned about the amount of plastic waste my order will create</p> <p>I feel pressure from family members to live a less environmentally friendly lifestyle.</p> <p>I feel pressure from family members to live a more environmentally friendly lifestyle.</p> <p>I feel pressure from friends to live a less environmentally friendly lifestyle.</p> <p>I feel pressure from friends to live a more environmentally friendly lifestyle.</p>
Qualitative Survey Questions
<p>What are your environmental values?</p> <p>Can you tell me about your definition of an environmentally sustainable lifestyle?</p> <p>Describe the environmental values of your family.</p> <p>In what ways do your family's actions show their understanding of environmentally sustainable living?</p> <p>Describe the environmental values of your friends.</p> <p>In what ways do your friend's actions show their understanding of environmentally sustainable living?</p> <p>You and your friends are walking, and one asks to quickly go to Shoppers Drug Mart as they need to buy shampoo. You realize you also need to buy shampoo. You and your friend pick up your items, and you head to self-checkout. Your friend reaches for a plastic bag to carry their item. It's your turn, you are wearing a backpack that could hold your shampoo. What do you do?</p> <p>You and your friends want to go get coffee, and on your walk over you remember that you have a reusable coffee cup in your locker. What do you do? (it's a five-minute walk back to your school)</p> <p>Follow-up question: What do you think your family would want you to do in this situation? Would they care?</p>

Questions Used to Situate the Environmental Education and Behavior of Participants

1. Which strategy do you most often use to lower your plastic consumption? (can select multiple)
 - Using reusable bags
 - Shopping at zero-waste stores
 - Choosing items that have recycled packaging over similar items that do not
 - Living a zero-waste lifestyle
 - None of these
 - Other
2. How often do you use the strategies listed above to lower your consumption
 - Very often (10/10 times I go shopping)
 - Often (8/10 times I go shopping)
 - Usually (6/10 times I go shopping)
 - Rarely (4/10 times I go shopping)
 - Never
3. If I forget my reusable bag in the car when grocery shopping I will....
 - Go back to my car and pick up the bags to carry my purchases
 - Instead buy plastic bags for my items
4. How often do you and your friends discuss environmental sustainability?
 - Every day
 - Every other day
 - Every three days
 - Every 5 days
 - Once a week
 - Every 2 weeks
 - Once a month

5. How often do you and your family discuss environmental sustainability?

- Every day
- Every other day
- Every three days
- Every 5 days
- Once a week
- Every 2 weeks
- Once a month

6. Are you aware that only 9% of plastic in Canada is properly recycled?

- Yes
- No