Elsevier Editorial System(tm) for Journal of Business Research

Manuscript Draft

Manuscript Number: JBR-D-18-02912R5

Title: Young children's consumer agency: the case of French children and recycling

Article Type: Full length article

Keywords: children; agency; recycling behaviors; family; micro-environment; social cognitive theory

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Abstract: This research offers insights into children's agency in the context of recycling behaviors by exploring how children's agency might be enacted in various settings (e.g., family, school, neighborhood). Using a series of child-centered methods, the authors observe children's recycling behaviors at school and at home and investigate their behaviors using role-playing games and a verbalization phase that captures the children's understanding of recycling and their varying degrees of agency around recycling. The findings suggest that personal (knowledge, concern), environmental (family microenvironment, encouragement, spatial organization, physical accessibility to recycling bins), and behavioral (past experiences) factors can facilitate or constrain children's consumer agency. In particular, their level of agency varies according to each child's specific microenvironment within the family, the location where the recycling takes place (private versus public spaces), and communication patterns within the family. From these findings, we provide several recommendations for public policymakers and business managers.

Detailed Response to Reviewers

Dear Co-Editor in Chief,

Thank you for managing the final stages of our submission to the *Journal of Business Research*. Charles Dennis informed us that he has recommended our paper "Young children's consumer agency: the case of French children and recycling" for acceptance. We gratefully thank the Associate Editor and the reviewers for the quality of their comments throughout the revision process.
We carefully considered the journal guidelines to meet JBR's standards, and particularly checked for the reference style and formatting, the language editing, and the formatting of the sections and figures/tables/appendices.
We further provide with this submission a title page with our academic affiliations and a short bibliographic note for each author, as well as the highlights related to this research; and a declaration of interests (none).

We hope that our submission will meet your expectations.

Sincerely

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Young children's consumer agency: the case of French children and recycling

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Declarations of interests: none

Young children's consumer agency: the case of French children and recycling

This research offers insights into children's agency in the context of recycling behaviors by exploring how children's agency might be enacted in various settings (e.g., family, school, neighborhood). Using a series of child-centered methods, the authors observe children's recycling behaviors at school and at home and investigate their behaviors using role-playing games and a verbalization phase that captures the children's understanding of recycling and their varying degrees of agency around recycling. The findings suggest that personal (knowledge, concern), environmental (family microenvironment, encouragement, spatial organization, physical accessibility to recycling bins), and behavioral (past experiences) factors can facilitate or constrain children's consumer agency. In particular, their level of agency varies according to each child's specific microenvironment within the family, the location where the recycling takes place (private versus public spaces), and communication patterns within the family. From these findings, we provide several recommendations for public policymakers and business managers.

Keywords: children; agency; recycling behaviors; family; microenvironment; social cognitive theory

1. Introduction

This article examines how children's agency might be encouraged, enacted, or developed using recycling as an empirical context. Sustainable consumption and recycling have attracted increasing attention (e.g., McCarty & Shrum, 1994; Park & Lin, 2018), and future generations of children can benefit from environmental education programs that inform their attitudes toward the environment and recycling (Carrier, 2009). However, with a few exceptions (Gentina & Singh, 2015; Grønhøj, 2006), prior research has overlooked children's recycling behaviors, even though their agency may determine sustainable consumption and recycling, particularly as children become increasingly involved in environmental issues at school or at home (Carrier, 2009) and more broadly in consumption activities (Flurry, 2007; Flurry & Burns, 2005; Lien, Westberg, Stavros, & Robinson, 2018).

Many industries seek to facilitate recycling in family settings, although only 48% of adult French consumers systematically recycle packaging (*Le Figaro*, 2018). Despite the lack of information about how children undertake recycling activities at home, a few companies work to address children's consumption, waste, and recycling. Hasbro's toy recycling program, for example, invites young consumers to return their used toys and games to be recycled into various materials (Hasbro, 2019). This growing interest in family recycling activities represents a new opportunity for companies to develop greener policies, suggesting the importance for managers to understand children's recycling practices, agency, and influence within families.

Most literature on children's agency centers on adolescents (e.g., Gentina & Singh, 2015), whereas their agency during the analytical stage of development (7–11 years old; John, 1999) remains relatively unexplored. Similarly, prior research notes children's influence on parents' pro-environmental consumption decisions (Grønhøj, 2006) but does not specify how children influence the many microenvironments that compose the family (Kerrane & Hogg,

2013) or how the distinct communication patterns within those microenvironments (Carlson, Grossbart, & Walsh, 1990) might determine children's agency. Additionally, no previous studies have identified the material conditions that may favor or constrain children's agency. Considering that children interact with many different settings, this investigation into children's agency moves beyond the private sphere of the family setting to include the public spheres of school and neighborhoods.

This research addresses three main questions: What do children know about recycling? How do children demonstrate agency in recycling in family and other settings? What factors serve to foster or constrain children's recycling agency in various private and public settings? In pursuit of these questions, this research draws on Social Cognitive Theory (SCT; Bandura, 1986), a valuable framework for understanding personal, environmental, and behavioral determinants of sustainable consumption (Phipps et al., 2013). The next section offers a review of SCT (Bandura, 1986), as well as prior consumer studies of agency, literature related to children and agency, and research on recycling and children. After describing a qualitative investigation among children and parents from 10 different families, we present the findings of an in-depth data analysis, which reveal the following: first, children's knowledge about recycling; second, the nature and extent of children's agency and the different ways in which they demonstrate it; and third, the factors that foster or constrain children's recycling behaviors. The results illustrate how microenvironments can support or limit children's agency in recycling behaviors. Finally, we outline some managerial recommendations, particularly for public policymakers, and directions for further research.

2. Children, agency, and recycling

2.1. Social cognitive theory

Rooted in an agentic perspective, SCT assumes that people are proactive in their surrounding environments (Bandura, 1986, 1989) and predicts reciprocal interactions among

personal (cognitive, emotional, and biological events), environmental (social and situational influences), and behavioral (past experiences) determinants that explain behaviors and their outcomes (Bandura, 1986). In exploring "the link between personal agency and social structure" (Phipps et al., 2013, p. 1229), SCT predicts that people are "producers as well as products of social systems" (Bandura, 2001, p. 266). This framework supports examinations of sustainable consumption from a reciprocal determinism perspective and can reveal how personal, environmental, and behavioral factors influence each other (Phipps et al., 2013).

Bandura (1986) distinguishes four features of direct personal agency: intentionality, forethought, self-reactiveness, and self-reflectiveness. First, personal agency relates to behaviors performed intentionally. Second, forethought permits people "to guide their actions in anticipation of future events" (Bandura, 2001, p. 7), as well as to structure and give general direction to their lives by attempting to regulate their behaviors to produce positive outcomes. Third, with self-reactiveness, people shape and motivate the execution of their actions. Fourth, self-reflectiveness refers to a capability to reflect on and evaluate one's own actions. These four elements reflect cognitive, emotional, affective, and choice processes that lead to a given outcome and combine to establish direct personal agency (Bandura, 2002).

However, people do not attain direct personal agency in all situations. Thus, in addition to direct personal agency, SCT encompasses proxy and collective agency. Proxy agency is socially mediated; it refers to the use of resources to attain desired outcomes. When people cannot exert direct control over environmental conditions, they might use these other means and resources to access the outcomes that they value and that structure their lives. For example, children might turn to their parents to secure the outcomes they desire and to act for them. In such cases, children's proxy agency relies on their ability to enlist and encourage their parents to achieve the children's desired objectives. Collective agency instead occurs

when people exert social efforts to pursue personal objectives. It depends on people's shared belief in their collective power to achieve goals (Bandura, 2002).

Observational learning is a key component of SCT, as derived from social learning theory (Bandura, 1977). People [children] are most likely to learn and reproduce desirable [recycling] behaviors by observing others [teachers, family members]. Thus, behaviors depend not only on individual perceptions and expectations derived from past experiences but also on observations of others' behaviors and the related outcomes. In this observational learning process, self-efficacy, defined as a person's belief in his or her capacity to perform a behavior, influences individual capacities to reproduce observed behaviors. The socialization literature also emphasizes the importance of observational learning (e.g., Moschis & Churchill, 1978), as manifested in three strategies that children use to acquire knowledge, beliefs, and behaviors from socialization agents. Specifically, a modeling strategy relies on observational learning, such that children imitate others' behaviors; a reinforcement strategy works as a socialization agent through either positive (e.g., rewards) or negative (e.g., punishment) paths; and the social interaction strategy combines the two previous strategies.

2.2. Children's agency, autonomy, and empowerment in consumption

Consumer research devotes less attention to children's agency than to notions of empowerment or autonomy. Children's empowerment relates to how they register their needs, find their voices, build their self-esteem, define their own values, and develop independence and autonomy (Buckingham, 2007). Their autonomy has mainly been studied in psychology contexts, reflecting how children develop and express their thoughts, interests, and ideas (Hauser Kunz & Grych, 2013). This research stream indicates that parents who encourage their children to develop autonomy while maintaining positive emotional bonds help children achieve a more stable sense of self (Steinberg, 1990).

Consumer researchers interested in agency, empowerment, and/or autonomy have mainly focused on teenage or adult consumers (Palan, Gentina, & Muratore, 2010). Adolescents engage in consumption activities such as dating or shopping with friends. They make their own choices (Lueg, Ponder, Beatty, & Capella, 2006), as opposed to matching their parents' preferences (Gentina & Chandon, 2013). Although not centered on agency per se, these studies show how autonomous adolescents make choices and achieve independence from their parents. Other research examines agency outside the family, such as when Haytko and Baker (2004) showed that teenagers regard shopping malls as favorable sites for expressing choices. Overall, however, we note a dearth of research on children's agency, especially across different consumption contexts and for younger children rather than for adolescents. Therefore, with the present research, we seek to expand our understanding of how agency is manifested among younger children in the recycling context.

2.3. Children's agency in family contexts

The socialization literature provides a useful foundation for theorizing about children's agency in familial decision-making processes. As children move through the socialization stages, they become progressively more involved in their own activities and in the group activities in which they participate (John, 1999). They also develop skills and abilities to consume (Ward, 1974), such as by making purchases with their own pocket money (Lindstrom & Seybol, 2003). As children increasingly act according to their own interests, they develop various forms of agency, according to the conditions in which their agency emerges. Differences in parents' consumer socialization styles (Bao, Fern, & Sheng, 2007; Carlson & Grossbart, 1988) and family communication patterns (Hsieh, Chiu, & Lin, 2006) tend to moderate children's agency. For example, authoritarian, rigid, controlling, and neglectful parents tend to have distant relationships with their children. The children then have few opportunities to express their consumption choices in a family setting. In contrast,

authoritative, permissive parents provide substantial opportunities for children to express their own choices (Carlson & Grossbart, 1988). Family communication patterns also have distinct impacts on children's opportunities to voice their preferences. Socio-oriented communication implies parental control of children's consumption activities; concept-oriented communication encourages children to manifest their own consumption choices (Carlson et al., 1990; Caruana & Vassallo, 2003). Four family communication styles thus emerge: laissez-faire (low socio-orientation, low concept orientation), protective (high socio-orientation, low concept orientation), pluralistic (low socio-orientation, high concept orientation), and consensual (high socio-orientation, high concept orientation). According to Carlson et al. (1990), the laissez-faire family communication style is characterized by both a low concept orientation, as well as by a low socio-orientation. "Parental messages [on the first dimension are] characterized as socio-oriented [and] promote deference to parents, and monitoring and controlling of children's consumer behavior. A second dimension, labeled concept-oriented, reflects parental messages which encourage children to develop their own skills and competence as consumers" (Carlson et al., 1990, p. 28). These authors further argue that neither type of communication orientation (concept-oriented or socio-oriented) is stressed in the laissez-faire family communication style. Parents in families with a laissez-faire communication style tend to show little interest in their children's ideas and consumer skills: this illustrates low concept-orientation. In addition, parents with a laissez-faire communication pattern do not try to control their children consumption behaviors, this illustrates low socio-orientation. Thus, children who experience a laissez-faire family communication style are not encouraged to be autonomous.

Overall, prior research suggests that family communication styles are an important factor that can foster or limit children's agency.

Research also confirms that socialization styles vary among family members. Families are not homogeneous and instead comprise multiple microenvironments (Plomin & Daniels, 2011). Microenvironments refer to a "child's unique position and experiences within their family ecology" (Kerrane & Hogg, 2013, p. 507). Each microenvironment has its own styles of socialization, interaction, and communication. These characteristics and interactions determine children's agency in the family, family consumption, and choices (Kerrane & Hogg, 2013). Kerrane, Hogg, and Bettany (2012) show that children interact differently with each parent and frame their purchase requests according to the respective parent's communication style. As a result, children may demonstrate various levels of agency, depending on the microenvironment, in family settings. By investigating key characteristics of parents' microenvironments, we seek more precise insights into children's agency in the family. However, in addition to developing in private family settings, children's agency might also emerge in public settings, such as in school.

2.4. Children and recycling

Most studies of children's role in recycling have prioritized the family setting. For example, Easterling, Miller, and Weinberger (1995) identified children as catalysts for the family's attitudes toward recycling, as they can foster parental recycling resocialization and influence family-level environmental attitudes and behaviors. Recycling resocialization may be particularly likely in consensual and pluralistic families (with concept-oriented communication), in which children are encouraged to discuss their ideas freely (McLeod & O'Keefe, 1972). However, there is no empirical support for these conceptual proposals. Gentina and Singh (2015) also explore how adolescents may foster recycling resocialization and show that adolescents in France develop influence strategies to encourage environmentally friendly behaviors within the family. Grønhøj's (2006) research on familial communication considers interactions in relation to recycling. The author finds that children

are rarely involved in recycling communication at home. However, all these studies rely on parents' reports of children's influence; no children were interviewed.

Other studies focus on children's recycling behaviors and attitudes outside family settings. For example, Carrier (2009) explored the development of positive attitudes in response to recycling education provided to U.S. elementary school children. Smith, Rechenberg, Cruey, Magness, and Sandman (1997) explored the positive effects of paper recycling education programs on the knowledge, attitudes, and behaviors of U.S. children, using self-reported accounts of recycling behaviors and attitude questionnaires. However, these studies do not address which factors might foster or constrain children's agency. That is, a thorough understanding of how children's agency might develop, both within and outside the family setting, is still lacking, which motivates our efforts to answer our research questions.

3. Methodology

This study investigates French children's agency in recycling behaviors. French recycling legislation (Grenelle de l'Environnement, 2009) has made it a popular topic in the mass media and in schools. Children between 7 and 11 years of age receive recycling education in their primary schools (Grenelle de l'Environnement, 2009), including lessons on how to sort waste. The purpose of this pedagogy is twofold: as future consumers and citizens, children need to learn about recycling issues and the skills necessary to sort waste, and children are also expected to engage in recycling resocialization (Ekström, 2007; Gentina & Singh, 2015). In line with previous research regarding children's voices (Chitakunye, 2012; Williams, Ashill, & Thirkell, 2016), we seek children's perspectives on and experiences of recycling. We take a three-stage approach, involving observations, role-playing, and interviews. We obtained consent for the children's participation from teachers and parents, as well as from the children themselves. Parents also granted explicit permission for their

children to participate in role-playing games (Banister & Booth, 2005). The families and children could withdraw at any stage and were guaranteed the confidentiality of the information provided; we changed all family and informants' names. All participants were also assured of the academic nature of the project (Nigel & O'Kane, 1998).

3.1. Observations conducted in school and family settings

We used participant observation of children's recycling behaviors, which also helped us develop natural relationships with the children (Wells, 1965). First, we observed the recycling behaviors of pupils in two elementary classes over two days. These classes support a recycling program targeting young children. Each observation consisted of assisting the teacher in daily activities with the children. Second, the observations of 10 different families (see Table 1) took place at informants' homes during mealtimes, when families generally come together (Del Bucchia & Peñaloza, 2016) and when most interactions with waste and kitchen bins occur. The participant observations of each family lasted for an average of approximately 3 hours.

Table 1 about here

The data gathered through the observations included the nature of waste in kitchen bins/containers, the number of kitchen bins or waste containers owned by each family and in each classroom, and how the family members and school children interacted with the waste, kitchen bins, and containers. Families in France have access to public waste containers (one for recyclable waste, one for nonrecyclable waste), located in a cellar, garage, or outdoors (garden or street). Local authorities are responsible for the provision, organization, and access to public waste containers. We do not address the spatial organization of or access to public containers but rather concentrate on the spatial organization of and children's access to recycling facilities in family and school settings (kitchen, classroom, playground).

Using a thematic analysis, we seek to shed light on recycling behaviors in families' homes and at school, including whether children have opportunities to participate in recycling in these settings. The observations enabled us to identify emergent themes (Corbin & Strauss, 2008), including the organization of recycling and children's participation. The lead researcher conducted most of the participant observations, and all three researchers analyzed the data separately and then collaboratively. The sociocultural diversity among the researchers (age, family structure, host country) helped make the familiar strange (Latour & Woolgar, 1979). To minimize interpretive bias, we also triangulated the data analysis among the three researchers (Belk, Wallendorf, & Sherry, 1989).

3.2. *Role-playing games*

To uncover more about children's agency in recycling, we also enriched the observations with a child-centered method that (1) regards children as full social actors (Chitakunye, 2012), (2) encourages children's participation, and (3) maximizes the amount of potential information. Role playing fits all these criteria. Children can reproduce their experiences and behaviors related to recycling, as performed in the family setting and as learned and performed at school. Our role-playing game method combines both a "provoked" observation to reveal recycling behaviors and children's know-how and a verbalization stage to detail their participation, (un)favorable microenvironments, and elements that foster or constrain children's agency in recycling. Similar to projective methods, role-playing games can effectively elicit responses from children, particularly about abstract themes and ideas (Banister & Booth, 2005). Children can accurately describe various situations through role playing by using imagination and improvisation (Rook, 2006). For our study, the observations provoked by the role-playing games relate to actual situations, such as behaviors performed at home or at school.

Six boys and six girls aged 8–11 years from the 10 families previously observed participated in this stage of the research. All of the children role-played two recycling behaviors: one related to what they performed and had learned at school and one pertaining to familial behavior. The two role-playing games took place in the children's homes and offer insights into how children's agency occurs and develops in family and school settings. Specifically, the children received a bag of waste (approximately 30 liters) that included paper, cardboard, batteries, plastic, glass, household waste, plastic bottles, yogurt containers, and clothes. The simple instructions were: "Here is a bag full of waste; you have to throw all these things [out]. Whatever you need, just ask me." No researcher intervention interrupted the children; as soon as they received the instructions, they immediately sorted the different types of waste into piles for discarding. Every child had taken part in a recycling role-playing game at school, so this task appeared familiar, and no apprehension was apparent among the children.

A video recording captured rich information and supported more exhaustive data coding. It also helped researchers recognize the different piles of waste and their relevance in relation to kitchen bins or waste containers in the home. Using thematic data analysis (Diamond et al., 2008), we thus identified how children organize their family's and school recycling.

Furthermore, the role-playing game facilitated children's verbalization of their own meaning or sense of participation in recycling. They described their understanding of recycling rules and objectives and provided rich information about their recycling concerns. In addition, we asked the children to describe their recycling actions in various microenvironments that encouraged or constrained their recycling behaviors (e.g., "With whom do you recycle? With whom are you at ease in recycling? Do you recycle alone?"). The verbalization stage for each child lasted 11 minutes on average and was audio recorded and

exhaustively transcribed and coded (Gibbs, 2007). The subsequent thematic analyses of these data reveal several main themes: (1) children's perceptions of their participation in recycling, (2) (un)favorable microenvironments for recycling behaviors, and (3) elements fostering or constraining their agency in recycling.

3.3. Interviews with parents

Finally, we conducted long interviews with 16 parents (McCracken, 1988) to explore sustainable practices by the families. Part of the interview was devoted to family settings; we focused on recycling in this setting and particularly on elements related to children. Parents had an opportunity to explain how recycling was organized at home and how their children participated in it. The interviews lasted 1 hour on average. We coded the interviews exhaustively (Corbin & Strauss, 2008) and analyzed the data to elicit communication profiles for each parent–child microenvironment. Using iterations, we formed, revised, and developed our understanding of the complete data set (Spiggle, 1994).

The multiple data sources—observations, role-playing games, and interviews with children and parents (separately) in different settings (school and family)—increase the credibility of the findings by revealing multiple realities surrounding the studied phenomena (Wallendorf & Belk, 1989). Due to triangulation and the complementarity of these methods, we could compare and contrast the data, as interpreted from different sources. As noted, the first author collected most of the data, and all three authors analyzed the data separately and then together (Sherry, 2006). This protocol helped ensure the quality of the data analysis. We also compared and contrasted our interpretations with existing literature.

4. Findings

The observations within family and school settings, as well as the role-playing games conducted with the children, offer key insights into how children's agency may be demonstrated in recycling behaviors in three settings (school, family, and neighborhood). The

results are organized around the environmental, behavioral, and personal determinants in the recycling context that foster or constrain children's agency in the settings investigated. We use an appendix to provide further selected extracts from the dataset that illustrate in greater detail the main components from the findings, as detailed in the text below. Most importantly, we structure the presentation of our findings here (which are cross-referenced in the Appendix) around the personal, environmental and behavioral determinants of children's recycling experiences across different settings.

4.1. Personal, environmental, and behavioral determinants of children's agency, classroom setting

Observations in the classrooms reveal that access to materials and processes are core conditions that enhance children's agency for recycling. Each classroom we observed was equipped with two sorting bins (Appendix – Section 1.1a. environmental determinants – spatial organization and recycling facilities: high in the school context):

> There is one yellow bin and one black bin under the whiteboard in the classroom. Children collect papers in the yellow bin, called 'Tri-tri' [sort-sort]. The black bin, called 'Fourre-tout' [catch-all], is used by children to collect any other type of waste (field note, elementary classroom).

The two sorting bins are easily accessible: situated on the floor, open, and available to each child to discard waste. In addition, recycling at school occurs in two ways. First, children can access the bins freely at any time during class, as the following situation reveals:

> Valentine copies a poem into her poetry book. She makes many mistakes and corrects them by erasing and then by copying again. Finally, she corrects everything so many times that there is a hole in the sheet of paper. The teacher tears out the page and asks Valentine to copy the poem out again. Valentine stands up and throws the sheet of paper away in the yellow bin in the classroom (field note, elementary classroom).

Valentine thus is autonomously involved in recycling behaviors; she knows to throw away the sheet of paper and in which bin to put it, thanks to her past experiences of recycling at school (Appendix – Section 2.1. behavioral determinants – past experiences). Her agency is made possible by specific environmental determinants, such as the spatial organization of recycling resources in the classroom and the materials (recycling bins) that are physically accessible to her. A policy that allows children's movement around the classroom also facilitates a prompt recycling response; Valentine immediately and proudly throws away her paper in the bin. The spatial organization (accessibility of the bin) also shows how French pupils are encouraged to recycle at school. Consistent with SCT (Bandura, 1986), Valentine relies on behavioral determinants (past experiences of recycling at school), personal determinants (knowledge about recycling practices at school), and favorable environmental determinants (spatial organization and physical accessibility to recycling materials) to define her recycling behaviors at school.

Second, recycling in class follows a strict pattern. Each week, two children are assigned responsibility for recycling. At the end of the day, these two children empty the classroom bins into specific containers located at the end of the playground. The large containers are accessible to the children, who can open them easily. This recycling process appears tailored to the children, and allows them to play a clear role in recycling at school. The school thus (1) expects children to participate actively in recycling and (2) establishes the necessary conditions to empower children to perform recycling actions. It also provides children with specific training in recycling, as described in the following:

> One day at school, a man came; he knew everything on bins, and he asked us to sort waste. [That was to test our knowledge.] And I made the grade (Roman, boy, 8, interview).

> I learned to recycle at school. Usually, in each year of elementary school, a woman teaches us how to sort waste and which containers to use, and she also teaches us how to make paper with newspaper, and water. Hmmm…I don't really remember how to do that. Anyway, I learned how to recycle the cardboard. I did that in all my elementary classes! (Eva, girl, 10, interview).

Roman and Eva not only report their knowledge about recycling but also express some interest in recycling and sense of pride at being able to perform their tasks well. This knowledge also emerges during the role-playing games, in which the child informants described the school recycling policy and followed it in line with the training that they had received. This knowledge underpins the behavioral determinants while also reinforcing the value of past experiences (Appendix – Section 2.1. behavioral determinants – past experiences; Section 3.1. personal determinants – knowledge). Here, we see both self-reactiveness and self-reflectiveness as examples of children's direct personal agency (SCT; Bandura, 1986).

We thus find strong evidence of children's agency in their classrooms. In particular, the children exhibit knowledge about recycling, and the school setting facilitates their agency with various environmental and behavioral determinants. The environmental determinants include spatial organization of and physical access to recycling bins that increase children's direct personal agency, thus allowing for intentionality and forethought (SCT; Bandura, 1986). In addition, when the school invests in informational strategies, it enriches children's personal and behavioral resources. Teachers and external speakers provide knowledge about recycling (personal determinants), thereby encouraging the children to sort their waste (environmental determinant). As such, children may rely on these socially mediated resources provided by the school context to access their desired recycling outcomes and thus enhance their proxy agency (Bandura, 1986). The teachers also engage in recycling practices (through

placing their own waste in specific bins), which supports the children's observational learning (Bandura, 1977). Children can learn desirable recycling behaviors from observing their teachers as well as other schoolmates. In turn, they can start to rely on their past experiences (behavioral determinants) to develop beliefs about their own capacities to perform similar behaviors (Bandura, 1986). These environmental (spatial organization, teachers' discourses), personal (knowledge about recycling), and behavioral (past experiences) determinants work together to foster and enhance children's agency for recycling at school.

4.2. Children's experiences of recycling in family and other settings

The analysis of the role-playing games showed that all the children interviewed were knowledgeable about and expressed positive views of recycling (Appendix – Sections 3.1. and 3.2. personal determinant – knowledge and recycling concern). Thus, personal determinants contribute to children's agency. We next focus our analysis more closely on the environmental and behavioral determinants that seem to be particularly critical to fostering or constraining agency.

4.2.1. Environmental and behavioral determinants that decrease agency. In four families (involving six children, namely, Augustin, Alizée, Mayeul, Eva, Andrea, and Paul), the spatial organization at home challenges children's opportunities to recycle (Appendix – Section 1.1b. environmental determinants – spatial organization and recycling facilities: low in the home context). For example, their kitchens feature a single bin, into which parents and children throw both recyclable and nonrecyclable waste. Some children clearly contrast their practices at home with what they have learned at school, as the following role-playing vignette reveals:

> Augustin had made four piles with his 30 liters bag of waste: one for batteries, one for recyclable waste (plastic and cardboard), one with organic waste, and one with glass. He explains that he reproduced his school learning. When I [lead researcher] asked

him if he does the same at home, he changed everything and made 1 pile of waste, saying: “We don’t do the recycling correctly at home. It’s very different from what I did at school. At school, we had many bins to sort things into, but at home, there’s only one”. Later, Augustin insists: “As far as [I’m] concerned, [I] put everything in the kitchen bin, because we only have one bin” (Augustin, boy, 10, role-playing game).

Augustin demonstrates substantial knowledge about recycling and can identify why his practices at home differ from those at school. Because of the discrepancy in the environmental determinants (spatial organization) between home and school, he cannot rely on behavioral determinants (past experiences at school) or personal determinants (knowledge acquired at school) to reproduce the recycling practices from school in his family setting.

These families also feature low concept-oriented messages (laissez-faire and protective) about recycling in parent-child microenvironments (Appendix – Section 1.2. environmental determinants – communication styles in the parent-child microenvironments). That is, some microenvironments rely on a laissez-faire style of communication (Appendix – Section 1.2a.), as reflected by Alizée’s description of recycling as “important” and regret that “at home, we don’t recycle much and don’t talk about it much.” She knows that recycling is important and, similar to her brother Augustin, is knowledgeable about recycling due to school training. She also acknowledges the inconsistencies between school and home practices but does not build on her past experiences at school to recycle at home. Their mother does not recognize their ability to recycle and explains that “they never talk about it. In addition, [she] never talk[s] to them about it either.” In contrast, their father Fabrice believes his “children are perfectly sensitized and knowledgeable about recycling. School education provides children with training and knowledge. I don’t have to do it anymore at home. They know.” Despite these different perceptions of their children’s attitudes about recycling, both parents engage in little communication about recycling, resulting in a laissez-faire

communication profile. Without any emphasis on recycling in this communication orientation, the children are not encouraged to recycle.

In parental microenvironments that reflect a protective communication pattern (Appendix – Section 1.2b.), the control exerted over the children's recycling activities offer few opportunities for children to develop their own skills and competences. For example, Mayeul considers recycling important and demonstrates substantial knowledge while role playing:

> Mayeul is really focused on the recycling task and reproduces school learning while sorting waste into many different piles: plastic, cardboard, glass, batteries, organic waste, compostable waste…. When I [lead researcher] asked him if he does the same at home, he seemed frustrated and said, "Nobody cares at home and we should recycle like this…. At home, we throw almost everything in the same bin, like this, without sorting, and then, we throw the kitchen bin into whichever large container (Mayeul, boy, 9, role-playing game and interview).

Similar to Augustin, Mayeul recognizes important personal and behavioral determinants but is constrained by a lack of environmental determinants; there is only one bin at home. He clearly expresses the contrast he perceives between recycling practices at school and at home. His mother also expects him to follow her instructions about recycling: "Sometimes, my parents ask me to throw waste in the containers located in the garage when the kitchen bin overflows" (Mayeul, boy, 9, interview). His mother "tell[s] him where to throw [things] away. He has to obey. That's it" (Anne-Françoise, mother). This socio-oriented communication reflects his mother's expectation of deference from Mayeul and control over his recycling activities, in line with a protective communication profile. His mother expects Mayeul to participate in family recycling, but he is not encouraged to do so autonomously, which compromises his direct personal agency. Although Anne-Francoise recognizes her son's recycling capabilities

at school, she does not value them in the family setting. Thus, it appears difficult for Mayeul to turn to his mother to achieve the desired recycling outcomes, as would be required to develop proxy agency or enhance his direct personal agency (Bandura, 2002).

Finally, we observe an in-between situation in which the child confronts two different communication patterns in mother-child versus father-child microenvironments (Appendix – Section 1.2a, b. environmental determinants – communication style in the parent-child microenvironments). Similar to the interaction between Mayeul and Anne-Francoise, Eva's mother-child microenvironment features a protective profile (Appendix – Section 1.2b.), whereas her father-child microenvironment more closely resembles Augustin's and Alizée's situation (Appendix – Section 1.2a.). Eva's father explains that "recycling is not a topic we talk about at home. Eva doesn't talk about it. I think she knows how to recycle thanks to the school training program, I don't always need to be behind her." Eva never mentioned her father in her interview; this father-child microenvironment entails very little communication about recycling, indicating a laissez-faire profile. Both the mother-child and father-child microenvironments are characterized by low concept-oriented communication, without the encouragement that might foster Eva's autonomous participation in recycling.

In these four families, the weak environmental determinants constrain the children's opportunities to achieve direct personal or proxy agency in their recycling behavior. First, recycling is poorly spatially organized. Second, these families adopt low concept-oriented communication styles in relation to recycling (laissez-faire and protective; Carlson et al., 1990). Third, children are not encouraged or expected to act autonomously or to exhibit their recycling competence and knowledge. In addition, the parents regard recycling training and education programs as a school matter, and this knowledge is less valued or promoted in communications through parental microenvironments. In summary, the children from these four families are concerned about recycling but limited or constrained in their agency due to

their restricted access to recycling facilities at home, low concept-oriented communication styles with parents, and a lack of encouragement to participate in recycling. The observational learning at school does not seem to be easily visible in these homes. Children thus have fewer opportunities to rely on learning from past behaviors (low behavioral determinants) and struggle to overcome the constraining environmental determinants (little communication or encouragement in the parental microenvironments), which reduces their agency for recycling behaviors at home (Bandura, 1986).

4.2.2. Favorable environmental but low behavioral determinants that decrease agency. In three families (where three children were involved, namely, Roman, Lenny, and Betty), recycling was spatially organized at home, with bins for recyclable waste and for nonrecyclable waste in their kitchens. The children had physical access to these bins. They demonstrated some knowledge and concern about recycling, noting that recycling is important (Betty and Roman) and necessary "to protect the planet" (Lenny). These positive attitudes toward recycling are fostered at least partly by the training they received at school. For these three children, both personal determinants (knowledge and concerns) and some environmental determinants (spatial organization and physical access to bins) exist, yet they still have limited agency for recycling activities at home for several reasons.

In Roman's family, for example, the observations revealed that the children did not take part in clearing the table and had no interaction with the kitchen bins (Appendix – Section 1.1c. environmental determinants – spatial organization and recycling facilities: high in the home context). Magali, the mother, notes that she likes to keep control of her children's behaviors: "My children are like my little slaves: 'take this and throw it in the blue bin,' 'take that and throw it in the yellow bin.'" During her interview, Magali explicitly said that she does not encourage Roman to take any recycling initiatives, suggesting a protective communication profile in the mother-child microenvironment that does not encourage Roman

to develop autonomy (Appendix – Section 1.2b. environmental determinants – communication style in the parent-child microenvironments). Roman's opportunities to be empowered through family recycling practices thus seem limited and hinder the development of proxy or direct personal agency (Bandura, 2002). However, Roman's father indicates a different communication profile; Mathieu asserts that he "talk[s] about what can be put in recycling bins. Roman knows perfectly what we need to do." In his interview, Roman also explains that he likes to talk about sustainability and recycling with his father, who seems more open to communicating and embraces a more consensual communication style than Roman's mother. Thus, the communication style in his father-child microenvironment fosters recycling, and Roman receives encouragement to participate in recycling activities. He can demonstrate his recycling capacities, which seem valued (Appendix – Section 1.3. environmental determinants – encouragement in the parental microenvironments). Although the environmental determinants of Roman's agency vary with the specific microenvironment, in this family, the mother is in charge of recycling and maintains control with a protective communication style and little encouragement, so Roman expresses little agency and is limited in his opportunities to become empowered. With little opportunity to rely on learning from past behaviors, Roman's behavioral determinants have minimal effect in overcoming the features of his immediate family microenvironment (mother-child), as represented by his mother's communication style.

Lenny and his mother rarely talk about recycling, and she confirms that "Lenny probably heard about recycling at school, but we never talk about it at home." During his role playing, Lenny expresses his detailed knowledge about recycling:

> Lenny is really proud to show me [lead researcher] how well he could do the sorting. He did three piles of waste: one for organic waste, one for recyclable waste, and one for glass. When I [lead researcher] asked him if he recycles like this at school or at

> home, he answered 'both.' He further explained: 'We did a training program at school about recycling. I did not tell mum about it. But I saw she was performing well in terms of recycling at home, so it's fine' (Lenny, boy, 9, role-playing game and interview).

Lenny's responses indicate that he perceives an alignment between practices at school and at home. Environmental determinants, such as the spatial organization of the bins, facilitate his replication of past experiences (behavioral determinants) and application of recycling knowledge (personal determinants). His mother-child microenvironment is characterized by a laissez-faire communication style though (Appendix – Section 1.2a. environmental determinants – communication style in the parent-child microenvironments), so Lenny is not encouraged to develop his direct personal agency to recycle in his home setting. Similar to Roman's mother, Lenny's mother is in charge of recycling at home and does not expect her son to participate. Lenny still expresses concern about recycling and exhibits clear evidence of direct personal agency in other settings, reflected by forethought, self-reactiveness, and self-reflectiveness (SCT; Bandura, 1986):

> I subscribed to a magazine talking about the environment. For me, it is important to protect the species in the environment that are in danger. I am also concerned about recycling. It's important to recycle to protect the planet. I've had the idea to create my own environmental club. I told my friends they can be members. And when one of my friends wants to be part of the club, I create a membership card with his or her photograph on it (Lenny, boy, 9, interview).

Lenny thus offers an important illustration of his direct personal agency in his peer environment. He spontaneously takes the initiative to create an environmental club and discusses recycling issues with his friends at school. He has created membership cards for his friends, and he proudly notes that his club has five members. Although his agency at home is

limited by a laissez-faire style of communication and little encouragement, Lenny finds alternative opportunities for achieving direct personal agency with his peers. His club is a clear manifestation of empowerment outside the family setting. Lenny does not rely on his mother to secure his desired recycling outcomes but rather is proactive, suggesting direct personal agency instead of proxy agency (Bandura, 2002).

These analyses thus indicate several conditions that favor children's direct personal agency in recycling. Spatial organization (kitchen waste bins) is a necessary condition, yet it does not appear sufficient for ensuring children's agency. Even when children have favorable attitudes toward recycling, their agency in family settings is limited by the communication profile and levels of encouragement that mark parent-child microenvironments, especially if these microenvironments are characterized by low concept-oriented communication about recycling. When parents (and mothers in particular) do not encourage children's recycling, they limit or constrain the children's opportunities to be empowered in the family setting. Behavioral determinants are also limited in that children have few opportunities to participate in recycling at home and are not encouraged to rely on the recycling behaviors they learned at school. These children thus face considerable difficulties due to the unfavorable microenvironments at home but still value recycling outcomes outside the home, as exemplified by Lenny's expression of direct personal agency outside the home in the playground (Bandura, 2002).

4.2.3. Environmental and behavioral determinants that foster agency. In three families (where three children were involved, namely, Méline, Julie, and Melvin), children not only have access to spatially organized recycling in the family setting but also experience high concept-oriented communication profiles in their mother-child or father-child microenvironments, as well as enhanced opportunities to empower themselves in recycling. All three children have at least one microenvironment characterized by a high concept-

oriented communication that fosters their agency in recycling, and thus they receive encouragement from their mother and/or their father.

In Julie's case, the mother-child microenvironment is characterized by a laissez-faire communication profile (Appendix – Section 1.2a. environmental determinants – communication style in the parent-child microenvironments), whereas the father Laurent seems more involved and "talk[s] to the girls [about recycling]… It's important. I try to show them how to pay attention… I think that later, for sure, they will have a recycling bin at home." Thus, her father-child microenvironment is characterized by high concept-oriented communication (Appendix – Section 1.2c.), and Laurent's messages about recycling encourage Julie to develop her own competencies and skills (Appendix – Section 1.3. environmental determinants – encouragement in the parental microenvironment). Julie is also highly knowledgeable about recycling and has favorable attitudes toward recycling (Appendix – Sections 3.1. and 3.2. personal determinants – knowledge and recycling concern). However, similar to Roman, Julie's mother–child microenvironment seems to supersede the father-child microenvironment, so Julie has somewhat limited opportunities to enact her agency and be empowered in the family setting. However, Julie still behaves in accordance with her strong recycling convictions and interests. She is firmly committed to recycling and seeks opportunities to enhance her direct personal agency and empower herself, especially in settings outside the family context, such as when "I organized the big day of my village's cleaning and recycling. I organized it personally [expressed proudly]. We cleaned up the entire village and collected all the waste on the ground" (Julie, girl, 9, interview). In this public setting of her village, Julie autonomously participated in recycling; in supervising the material organization, she displays not only empowerment in making recycling decisions but also pride and happiness. Despite her lack of interest in her daughter's recycling at home, Julie's mother strongly encourages these activities (Appendix – Section 1.3. environmental

determinants – encouragement in the parent-child microenvironments). Similar to Lenny, Julie expresses a form of direct personal agency outside the home, exhibited through intentionality, as well as forethought, self-reactiveness, and self-reflectiveness. She controls the main environmental conditions related to her behaviors (Bandura, 2002).

Méline also experiences varying communication across parental microenvironments. The mother-child microenvironment seems characterized by a laissez-faire communication style; Méline and her mother engage in little communication about recycling (Appendix – Section 1.2a. environmental determinants – communication styles in the parent-child microenvironments). However, Méline's father has a compost heap in the garden, "because [he] wanted a vegetable garden and for the children, it was fun." He explains that "everyone cares about recycling. Méline often asks which kitchen bin to throw waste away in. I talk about it at home with Méline." In turn, Méline happily describes her gardening activities with her father: "Dad is responsible for the compost. I help him weed the garden and collect the waste that we throw on the compost. Additionally, we have an old bucket on the window ledge and I throw my banana peelings in that, for example." Méline thus participates actively and autonomously in recycling activities with her father. Her father-child microenvironment fosters Méline's collective agency in recycling, with high concept-oriented communication and much encouragement (Appendix – Section 1.2c. environmental determinants – communication style in the parent-child microenvironments; Section 1.3. encouragement in the parental microenvironments). In contrast to Julie, Méline has opportunities to enact her agency in the family setting by participating autonomously in her family's recycling activities. Méline can also rely on observational learning strategies; she observes her father undertaking recycling activities. She also reproduces recycling practices learned at school. That is, behavioral determinants exist in that Méline can rely on past experiences. She expresses happiness about participating in such behaviors at home, and her father encourages her, so

Méline's socialization process appears to be based on positive reinforcement (Bandura, 1977; Moschis & Churchill, 1978). The father and daughter are keen to achieve the same goal and combine their efforts, such that they express a form of collective agency (Bandura, 2002).

Melvin also has the opportunity to enact his agency in his own activities in the family setting, in which he collects plastic bottle caps to support disabled people: "I installed a small receptacle in the kitchen to collect plastic caps… Once the receptacle is full, I put the caps in a plastic container and give it to mum. Her friend works for the organization. Her work is to collect as many caps as she can for disabled people." Melvin lives with his mother, stepfather, and half-brother. The stepfather appears to take little notice of Melvin's initiatives, but his mother supports and takes part in his actions. This mother-child microenvironment thus supports Melvin's agency (Appendix – Section 1.2c. environmental determinants – communication style in the parent-child microenvironments). As his mother explains, "Melvin would never throw away an empty bottle with a plastic cap. Because he knows. Even when he goes to his friends, he would take the caps off and bring them back. Voilà! Because it's important for him. I have never said anything about this to him. He did it all on his own" (Aude, mother). The high concept-oriented communication between Melvin and his mother about the recycling of caps and his mother's real encouragement fosters Melvin's direct personal agency and causes him to feel empowered to make decisions. Similar to Méline, Melvin experiences supportive environmental determinants, along with positive past experiences at school. Thus, he experiences favorable personal, environmental, and behavioral determinants that influence his recycling behaviors (Bandura, 1986). Because his mother participates with Melvin in recycling caps, they engage in a form of collective agency (Bandura, 2002).

In summary, and in line with the SCT, these findings suggest that agency in recycling relates strongly to environmental, behavioral, and personal determinants (Bandura, 1986).

First, with regard to environmental determinants, when recycling is spatially organized and physically accessible to children, they have more opportunities to enact their agency by participating in recycling in the family setting. Our data also show that communication about recycling in parental microenvironments is an important factor. High concept-oriented communication can foster children's agency in recycling in family settings. Encouragement in these microenvironments also fosters children's agency. Second, in terms of personal determinants, our results indicate that children express substantial concern about recycling issues as well as a high level of knowledge. Third, for the behavioral determinants, we find that children rely on past behaviors to participate in recycling both inside and outside the home through observational learning processes. These results challenge and extend previous research that has suggested that children rarely participate in recycling in family settings (Grønhøj, 2006). We find that children are involved in recycling, even though they often experience little agency within their families (compared with when they are at school), in line with their expressed concerns about recycling.

5. Discussion and implications

In this study, we investigated children's agency in the specific context of recycling behaviors. Prior research has highlighted children's limited participation in recycling behaviors (Grønhøj, 2006), but it did not take account of children's perspectives. To understand children's agency in recycling behaviors and in line with previous literature that calls for the inclusion of children's voices in research designs (Banister & Booth, 2005; Chitakunye, 2012), we collected data from children for our empirical research. To identify children's agency, we undertook observations in school and family settings, conducted role-playing games with the children, and interviewed their parents.

First, we questioned children about their knowledge about recycling. The findings suggest that these children are knowledgeable and concerned about recycling, which

illustrates their personal determinants. The findings further suggest that behavioral determinants enhance children's recycling capabilities through training at school. Self-learning and observational learning also take place, often at school and sometimes in the family setting. Environmental determinants could be traced in our findings, such that families with high concept-oriented communication profiles were likely to provide some knowledge about recycling. Access to concrete recycling assets (e.g., bins for sorting waste) in family settings gave children opportunities to implement their knowledge and replicate recycling practices learned at school. Their parents' recycling practices also supported observational learning processes (Bandura, 1977). Our study suggests varying degrees of alignment between recycling practices at home and at school, particularly when children benefit from such environmental determinants. In contrast, we observed a marked difference in recycling practices at school and at home when environmental determinants are missing (e.g., single bin, no access to bins).

Second, in seeking to define how children demonstrate agency, our findings suggest that children express their recycling agency in their family when they have opportunities to participate in recycling. For example, they might manage waste related to family meal preparation, garbage disposal, and garden compost. We also note that children's agency in recycling seems particularly visible at school, where recycling is spatially organized and children have access to recycling materials (bins and containers). In addition to family and school contexts, we noted a third type of setting, such as neighborhoods and playgrounds that are public spaces that also permit children to demonstrate their direct personal agency in recycling.

Third, regarding the factors that either foster or constrain young children's agency, our results suggest the need to take account of not only physical access to recycling materials (e.g., kitchen bins, classroom receptacles) but also parental microenvironments that might or

might not foster recycling. We summarize these results in Table 2 and show *a priori* the favorable personal determinants about recycling expressed by children; we illustrate the four key combinations (of determinants) that facilitate varying degrees of children's agency in Figure 1.

Table 2 about here

Figure 1 about here

5.1. Theoretical contributions

Our research contributes to research involving children, agency, and recycling. Prior research on recycling has mainly focused on adolescents' influence in family settings (Gentina & Singh, 2015; Grønhøj, 2006), either in terms of resocializing parents or altering familial attitudes and behaviors. Earlier studies do not offer empirical evidence. By observing and interviewing young children, our study helps to extend existing knowledge by providing some initial empirical evidence of children's recycling behaviors within and outside the family setting. Our observations in French schools suggest that children have more opportunities to participate in recycling behaviors when their education provides practical knowledge about recycling, fostering children's proxy agency. Encouragement to recycle is not always replicated in their homes. Moreover, granting children autonomy in recycling processes and encouraging their participation helps foster children's agency (Hauser Kunz & Grych, 2013). However, if they lack support in parental microenvironments or when family recycling practices conflict with the practices and knowledge acquired at school, some of these children seem to have few opportunities to be empowered and show little agency in recycling.

Similarly, most current agency literature focuses on adults (e.g., Palan et al., 2010). To the best of our knowledge, this study is the first to investigate children's agency and how children might autonomously participate in activities such as recycling. Children may

experience difficulties participating autonomously in many activities, and in line with SCT (Bandura, 1986), we propose that personal (knowledge, concerns about the environment and recycling), environmental (microenvironments, physical and spatial facilities for recycling), and behavioral (past experiences) determinants are all critical for establishing children's agency in the context of recycling. Our results further suggest that children rarely express direct personal agency, but rather tend to pursue proxy or collective agency in family settings. Direct personal agency, if expressed, seems to emerge more clearly in settings beyond the family, such as when Lenny and Julie, facing unfavorable determinants at home, leverage favorable peer microenvironments to create a club or organize a village recycling day. In line with Bandura (2001), both children enhance their direct personal agency by intentionally performing recycling behaviors. They are also demonstrating forethought in their pursuit of positive outcomes from their recycling behaviors. Self-reactiveness further motivates these two children's recycling behaviors. These children are finally able to evaluate their own actions with self-reactiveness. While engaging other people in their recycling initiatives, they contribute to a collective agency. There is evidence of this in the family setting when Méline and her father pursue similar recycling efforts with the composting activity. However, among our informants, we did not find any evidence of socially mediated resources provided by the parents to assist children's proxy agency. The school setting seemed more favorable in providing such resources for children, such as information and training about recycling.

Our study helps highlight some critical environmental determinants of children's agency for recycling behaviors. Specifically, children's agency seems to increase when recycling is spatially organized and recycling materials (bins) are physically accessible. Such elements are very visible in the school setting but less so in the family setting; only half of the families we interviewed spatially organized recycling at home. These findings resonate with prior research conducted among adults, which highlights the critical role of access to

structured recycling programs to promote participation (Guagnano, Stern, & Dietz, 1995; Steg & Vlek, 2009). Thus, children's agency tends to be enacted and demonstrated in recycling behaviors if they have the opportunity to participate autonomously in recycling behaviors that are spatially organized using accessible physical recycling materials (bins). Because children tend to comply with the existing organization of recycling (e.g., in the family kitchen), their agency can be limited and constrained by the characteristics of their microenvironments.

This study also adds to our understanding of sustainable consumption (e.g., Phipps et al., 2013), with its focus on children. Children who are concerned about recycling try to find alternative settings to demonstrate their agency, yet they remain relatively dependent on their parents to perform recycling. Our observation suggests that children's agency entails less autonomy than the agency achieved by adults and often requires some degree of mediation by adults. Agency during childhood involves participating actively in activities, according to the child's own concerns and interests. We contend that a child who recycles out of obedience to parents' dictates achieves lower levels of agency in recycling, whereas a child who engages in recycling behaviors with little support from parents demonstrates higher levels of agency. Nevertheless, in our sample, we rarely observed parental-mediated resources; rather, school-mediated resources (information and training) tended to be more visible in enhancing children's proxy agency.

Finally, this study contributes to research into communication and recycling. Prior research suggests that informational strategies adopted by public bodies can increase individual knowledge and awareness of recycling (Steg & Vlek, 2009). In family settings, little research details familial communication in recycling contexts, with the notable exception of Grønhøj (2006), who concludes that children's limited participation in recycling is associated with limited communication. We extend Grønhøj's (2006) point by examining communication patterns within family microenvironments. Our findings suggest that distinct

communication patterns across parental microenvironments can foster or constrain children's agency in recycling. High concept-oriented messages about recycling seem to foster children's agency; low concept-oriented messages seem to constrain it.

5.2. Practical contributions

Moving beyond these theoretical contributions, we look at potential implications for managers and public policymakers. Managers of products and brands that are regularly marketed to children should take account of children's concerns and any opportunity for encouraging children's agency. Marketing that targets children often highlights the hedonistic or healthy dimensions of their products. Our study suggests that marketing campaigns could also effectively address recycling and issues of sustainable consumption as they relate to children. For example, in France, consumer goods brands such as Yoplait, Petits Filous, or Panzani might develop marketing communications that 1) demonstrate how easy it is for children to recycle their product packaging and 2) describe how recycled packaging is transformed into new material. Such communications may raise parents' awareness of their children's agency in recycling as well. Companies that produce recycling materials, such as garbage bags, seem to have neglected children as an important group of potential consumers. The use of bins designed to appeal to children is often promoted in bathrooms or bedrooms, rather than in kitchens. However, our study suggests that many children would be interested in recycling daily waste in their kitchens. Therefore, we recommend that companies that manufacture bins, garbage bags, and other recycling-related products should tailor their offers and communication campaigns to appeal to children to help children achieve some degree of direct personal agency in their family settings. In so doing, these companies could respond to children's needs to recycle, raise parents' awareness of these needs, and ultimately increase recycling practices in family settings.

For public policymakers, our study offers insights into how to ensure the agency of future generations with regard to recycling behaviors within and outside the home. From an educational perspective, teachers can provide effective and influential training about recycling. French children who receive specific training at school appear to know how to recycle and can perform recycling autonomously in school settings. Although school training programs are necessary, they are not a sufficient condition despite the seemingly widespread assumption that recycling education lessons will foster children's agency in recycling in various settings. Rather, children's agency is often limited by parental microenvironments. Therefore, we recognize the need and opportunity for social marketing campaigns that raise awareness and increase knowledge among parents about the importance of granting their children opportunities to recycle in family settings.

6. Limitations and further research

We conducted observations, role-playing games, and interviews in a limited number of classrooms, with a limited number of families and children. Most of the participants belonged to the French middle class. Further research should replicate our study in different social and cultural contexts. We also explored the specific characteristics of parental communication styles within families, but we limited our investigation to parental microenvironments. We thus excluded siblings' microenvironments; these elements did not emerge from our results. Considering evidence of the importance of siblings in modeling family behaviors (Commuri & Gentry, 2000; Kerrane & Hogg, 2013), we suggest that research could explore recycling behaviors in light of siblings' microenvironments. Our observations were specific to schools in which children had received recycling training and had access to recycling bins and containers. Additional studies might explore agency among children who have not had the advantage of recycling training programs and consider how much these children engage in recycling practices. Another avenue for further research might explore other environmental

determinants that support children's participation in recycling or promote family recycling practices and that provide more autonomy and ease barriers to recycling (e.g., encouraging the use of dedicated kitchen bins for recyclable and nonrecyclable waste, ensuring that bins are accessible to children). Finally, further research might consider the interplay of factors at the microenvironmental (individual), mesoenvironmental (family), and macroenvironmental (society) levels to enrich policy recommendations related to recycling in the shorter term and sustainable consumption in the longer term.

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Table 1. Children's characteristics and family profiles

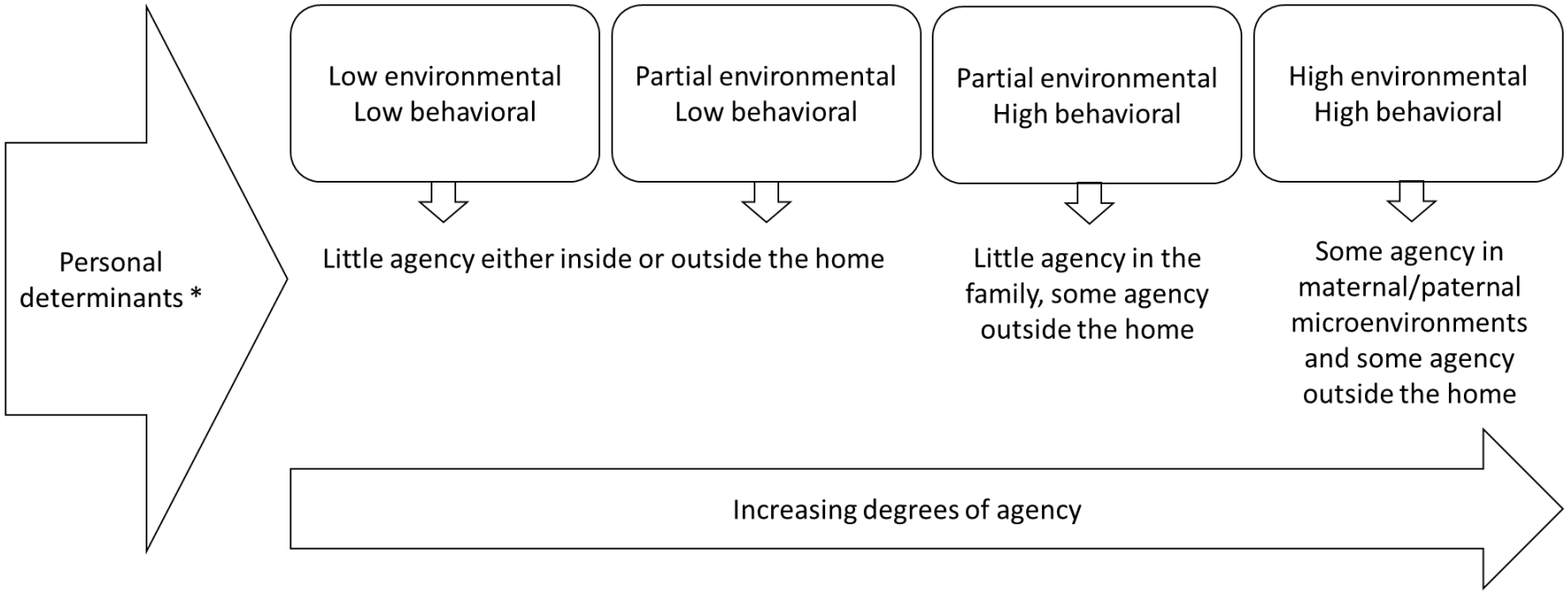
Family Pseudonyms	Children	Parents	Family Profile
Wood	Alizée (girl, 11) Augustin (boy, 10)	Father: manager (45 yrs); Mother: manager (43 yrs) Married, 2 children (11 & 10 yrs)	The family lives in a house in a rural area. The mother expresses great concern about the environment and recycling; the father seems uninterested. Both children express high environmental and recycling concerns, and both show the ability to recycle.
Zanto	Melvin (boy, 9)	Mother: Stay-at-home (36 yrs); Stepfather: worker (40 yrs) Common law couple, 2 children (2 & 9 yrs)	The family lives in an apartment in the city. Neither the mother nor the stepfather expresses any major concerns about the environment. Still, the family recycles its waste according to local authority guidelines. Melvin is highly concerned about the environment and recycling. He collects plastic bottle caps for disabled people and gives them to his mother. His stepfather seems uninterested in Melvin's actions.
Chardo	Roman (boy, 8)	Mother: teacher (35 yrs); Father: sales representative (36 yrs) Married, 2 children (5 & 8 yrs)	The family lives in a house in a rural area. The parents are highly concerned about the environment and recycling. They impose their consumption choices on their children. Roman is highly concerned too and has the ability to recycle but has limited access to kitchen bins.
Chevaly	Mayeul (boy, 9)	Mother: stay-at-home (40 yrs); Father: banker (42 yrs) Married, 4 children (2–9 yrs)	The family lives in a house in the city. The parents are uninterested in the environment and recycling. Mayeul obeys his mother's instructions regarding recycling tasks. He is fully aware that his family does not do anything for recycling and knows how to sort waste. He would like to do more.
Gervais	Eva (girl, 10)	Mother: medical representative (35 yrs); Father: garage owner (36 yrs) Married, 3 children (2–10 yrs)	The family lives in a house in a rural area. The parents are uninterested in the environment and recycling. Eva is aware of recycling rules and has the ability to recycle. She is concerned about the environment. Regarding recycling, she follows her mother's instructions.
Malou	Paul (boy, 11)	Mother: pharmacist (38	The family lives in a house in the city. The parents do not express any strong concerns

	Andrea (girl, 10)	yrs); Father: pharmacist (38 yrs) Married, 2 children (11 & 10 yrs)	about the environment or recycling. Paul and Andrea are aware of environmental issues and have the ability to recycle. However, the family does not recycle its waste. Paul would like to do more. Andrea does not express any wish to do more about recycling.
Gobelle	Méline (girl, 9)	Mother: nurse (35 yrs); Father: nurse (37 yrs) Married, 3 children (2–9 yrs)	The family lives in a house in the city. Both parents are highly concerned about the environment and recycling. Méline is aware of recycling issues and participates actively in the composting activity.
Do Santos	Lenny (boy, 9)	Mother: saleswomen (44 yrs) Single, 2 children (9 & 14 yrs)	The family lives in an apartment in the city. The mother is concerned about the environment and recycling. Lenny initiated an environmental club at school. Five of his friends are members, for whom he created membership cards. They talk about waste and species extinction.
Schulz	Julie (girl, 9)	Mother: trade union manager (35 yrs); Father: horticulturist (36 yrs) Married, 2 children (7 & 9 yrs)	The family lives in a house in a rural area. Both parents are highly concerned about the environment and recycling. Julie is also very engaged in environmental issues. She initiated the cleaning of her whole village and areas at school.
Beach	Betty (girl, 10)	Mother: teacher (40 yrs) Single, two children (10 & 13 yrs)	The family lives in an apartment in the city. It integrates sustainability into its everyday behaviors. Betty is concerned about the environment but does not take part in recycling at home.

Table 2. Impacts of environmental, and behavioral determinants on children's agency in and outside the family

		Behavioral Determinants (past experiences)	
		Low	High
Environmental Determinants (spatial organization of recycling and recycling facilities; communication style; encouragement in the parental microenvironment)	Low (few favorable environmental determinants)	Little agency in family microenvironments and outside the home (Augustin, Alizée, Mayeul, Eva, Andrea, Paul)	No evidence of this category among informants
	Partial (some favorable environmental determinants)	Little agency in family microenvironments and outside the home (Betty, Roman)	Little agency in family microenvironments, but some agency outside the home (Lenny)
	High (many favorable environmental determinants)	No evidence of this category among informants	Some expressions of agency in the paternal or maternal microenvironments (Melvin, Méline), and some agency outside the home (Melvin, Julie) or in the school context (Valentine)

Figure 1. Factors that foster or constrain varying degrees of children's agency (direct personal, proxy or collective)



Appendix Thematic analysis derived from observations, role-playing games, and interviews in the family and school settings

1. Environmental determinants	**1.1 Spatial organization and recycling facilities**	**a) High (in the school context)**: *There is one yellow bin and one black bin under the whiteboard in the classroom. Children collect papers in the yellow bin, called 'Tri-tri'* [sort-sort]. *The black bin, called 'Fourre-tout'* [catch-all], *is used by children to collect any other type of waste* (field note, elementary classroom). *Bins are accessible to children. They are situated on the floor, and they are open: children do not have to open any lids. It makes the bins easily accessible* (field note, elementary classroom). **b) Low (in the home context)**: *As far as I'm concerned, I put everything in the kitchen bin, because we only have one bin.* (Augustin, boy, 10, interview) *Everything I have to throw away, I throw [away] in the kitchen bin.* (Alizée, girl, 11, interview) *At home, we throw almost everything in the same bin, like this, without sorting, and then, we throw the kitchen bin into whichever container.* (Mayeul, boy, 9, interview) *In the kitchen, there is a two compartment bin, one compartment for recyclable waste and the other one for non-recyclable waste. But Caroline, the mother, confesses that she does not understand the purpose of two bins instead of one. As a result, the two compartments receive equally whichever waste, without any sorting.* (field notes, Gervais family) *There is an automatic kitchen bin. As soon as children finish their lunch, they clean up the table for everyone and throw everything in the kitchen bin. All non-bulky items are thrown into the kitchen bin, even papers and cardboards.* (field notes, Malou family) **c) High (in the home context)**: *As soon as the children have finished their meal, I* [researcher-observer] *help to clear the table, while the children go and play in their rooms. The mother sorts the waste into two different bins: one for the compostable waste that will be thrown onto compost in the garden; and one for non-recyclable waste.* (field

		notes, Chardo family) *The lunch ends. The girls eat their yoghourts. Then, they go upstairs to their rooms leaving everything high and dry. I* [researcher-observer] *help the mother to clear the table. The family owns a kitchen bin with three compartments (paper, glass, and organic waste), located on the kitchen's floor and accessible to anyone. The mother seems very proud to explain that it allows a pre-sort of waste. She throws the waste from lunchtime away in the kitchen bins.* (field notes, Schulz family) *As soon as Melvin finishes his yoghourt, he cleans up his place and goes to the kitchen. As soon as his mother and I* [researcher-observer] *finish our lunch, we clean up our places and I ask Melvin where I should throw away my waste. Proudly, Melvin shows me the automatic kitchen bin, it is overflowing. He also shows me the bin on the floor for recyclable waste. Then he indicates that dishes go in the dishwasher and opens it for me* (field notes Zanto family) *Recycling is organized with four kitchen bins. There is one for paper and one for glass, both located under the kitchen sink, one for organic waste located on the window ledge and one for non-recyclable waste located under the kitchen sink.* (field notes, Gobelle family)
	1.2 Communication styles in the parent-child microenvironments	**a) Laissez-faire** • Alizée-Parents microenvironment *Recycling is important, but at home, we don't recycle much and don't talk about it much.* (Alizée, girl, 11, interview) *Well, I don't believe that my children are able to recycle properly* [laughs]*! I don't feel that they are highly concerned nor knowledgeable. Well, they never talk about it! In their daily life, I mean at school, I don't know how they do the recycling.… But at home, they are not concerned about recycling. They never talk about it. And I never talk to them about it either.* (Corinne, mother) *My children are perfectly sensitized and knowledgeable about recycling, as they learn about it at school. School education provides children with training and knowledge. I don't have to do it anymore at home. They know.* (Fabrice, father).

		• Eva-father microenvironment *Recycling is not a topic we talk about at home. Eva doesn't talk about it. I think she knows how to recycle thanks to the school training program, I don't always need to be behind her* [about recycling]. (Fabrice, father) *Eva never mentions her father in her interview about recycling.* • Lenny-mother microenvironment *We did a training program at school about recycling. I did not tell mum about it. But I saw she was performing well in terms of recycling at home, so it's fine.* (Lenny, boy, 9, interview) *Lenny probably heard about recycling at school, but we never talk about it at home.* (Angelina, mother) • Julie-mother microenvironment *Mum takes care of recycling at home.* (Julie, girl, 9, interview) *We don't talk much about recycling at home. I think that if they talk a lot about it at school, it's enough. The message will get to their brains.* (Nathalie, mother) • Méline-mother microenvironment *I learned about it at school but I don't talk about it at home with mum.* (Méline, girl, 9, interview) **b) Protective** • Mayeul-mother microenvironment *Sometimes, my parents ask me to throw waste in the containers located in the garage when the kitchen bin overflows.* (Mayeul, boy, 9, interview) *Well, children, you know, they have heard about recycling at school. But they cannot tell me what to do and how to do it. And above all, do they do anything about it [in recycling at home]? … No! Voilà… For instance, I would give something to Mayeul and I tell him where to throw it away. He has to obey. That's it.* (Anne Françoise, mother). • Eva-mother microenvironment *Mum asks me to go to the garage and throw that waste in that container or that container.* (Eva, girl, 10, interview) *Eva throws waste when I ask her. Recycling is at school. School provides explanations and training.* (Caroline, mother)

		• Roman-mother microenvironment *My children are like my little slaves: "take this and throw it in the blue bin", "take that and throw it in the yellow bin."* (Magali, mother) • Betty-mother microenvironment *I merely do what my mum asks for recycling.* (Betty, girl, 10, interview) *When I ask Betty something about recycling, she does not complain. But she won't do it on her own. She does not demonstrate any sense of initiative…. My daughter never talks about recycling, never, I don't know what she did or learned at school. I think that they don't do much.* (Jane, mother) **c) High-concept orientation** • Julie-father microenvironment *I talk to the girls* [about recycling]. *I take them to the local rubbish tip. I show them which bin they should put the waste into. They learned this at school and they often ask me: "How do you know, Daddy?* [because you did not learn at school]" *I do want to show my children. It's important. I try to show them how to pay attention… I think that later, for sure, they will have a recycling bin at home.* (Laurent, father) • Méline-father microenvironment *Everyone cares about recycling. Méline often asks which kitchen bin to throw waste away in. I talked about it at home with Méline.* (Eloi, father) • Melvin-mother microenvironment *I installed a small receptacle in the kitchen to collect plastic caps. I asked mum and my stepfather to think about that. My stepfather always forgot to remove the plastic caps from the plastic bottles. I always have to pick out the plastic bottles from the sorting bin in the kitchen in order to remove the caps. Once the receptacle is full, I put the caps in a plastic container and give it to mum. Her friend works for the organization. Her work is to collect as many caps as she can for disabled people.* (Melvin, boy, 9, interview) *Melvin would never throw away an empty bottle with a plastic cap. Because he knows. Even when he goes to his friends, he would take the caps off and bring them back. Voilà! Because it's important for him. I have never said anything about this to him. He did it all on his own.* (Aude, mother)

	1.3 Encouragement in the parental microenvironments	*Since we are parents, we are conscious of the planet and the future. I'm trying to have good recycling habits, and to make it consistent with their [children] training at school. I'm trying to involve Roman and his sister, so that they participate.* (Mathieu, Roman's father) *Recycling is really important, and I'm happy if my children are involved in sustainability. I try to teach them. Training at school helps too.* (Laurent, Julie's father) *She has a lot of fun, Julie! One day, she arrived home from school and she prepared flyers the whole night: "Let's clean the Earth!" She gave them to her girlfriends the next day. They created a group to clean up the village. I thought the idea was excellent! Yeah… They have done some things. They cleaned their courtyard at school. They cleaned the village. They were so proud. This is really awesome!* (Nathalie, Julie's mother) *Méline asks in which bin waste has to be sorted. She likes to help me with compost, and I encourage her to do it on her own* (Eloi, Méline's father)
2. Behavioral determinants	**2.1 Past experiences**	**a) In the school context**: *Valentine copies a poem into her poetry book. She makes many mistakes and corrects them by erasing and then by copying again. Finally, she corrects everything so many times that there is a hole in the sheet of paper. The teacher tears out the page and asks Valentine to copy the poem out again. Valentine stands up and throws the sheet of paper away in the yellow bin in the classroom* (field note, elementary classroom). The knowledge further expressed by children reflects past experiences acquired in the school context that provides training about recycling. (see below)
3. Personal determinants	**3.1 Knowledge**	*One day at school, a man came; he knew everything on bins, and he asked us to sort waste.* [That was to test our knowledge.] *And I made the grade* (Roman, boy, 8, interview). *I learned to recycle at school. Usually, in each year of elementary school, a woman teaches us how to sort waste and which containers to use, and she also teaches us how*

		to make paper with newspaper, and water. Hmmm…I don't really remember how to do that. Anyway, I learned how to recycle the cardboard. I did that in all my elementary classes! (Eva, girl, 10, interview). *Fruit and vegetable peelings go into the compost. Glass goes into a special container for glass, outside the house. Medicines that you don't use anymore go back to the chemist. Paper, cardboard, and newspapers go into the 'sorting container,' as well as plastic bottles. Everything else goes into the waste bin. We're doing recycling in the same way at home, except for the compost which we don't have* (Julie, girl, 9, role-playing game). *When you sort waste, you don't throw waste away just anyhow. We have to respect what is indicated on the containers' packaging information.* (Julie, girl, 9, role-playing game) *I remember that cardboard has to be thrown into the sorting bin. Also juice bottles. But at home, we don't recycle much. We don't talk much about it. Though it's important. We saw that at school. The teacher explained to us why we had to recycle and we saw a movie about recycling.* (Alizée, girl, 11, role-playing game) *I take a plastic bag [sorting plastic bag] and I put plastic bottles inside. Hum, before that I remove the plastic caps. I keep the plastic caps for disabled people so that we can help buy some wheelchairs. Papers, cardboard and glass bottles, you can recycle, so they all go in the sorting bag. Used batteries, I don't know about. I ask my mum. She takes care of that. Everything else you can't sort goes in the waste bin.* (Melvin, boy, 9, role-playing game) *Once the clementine is peeled, you have to throw the peel in the composter. It's easy. I know two ways of composting. There is the one of my godfather, there are many bowls* [each one on top of the other], *he throws his waste in there [top bowl] with the earthworms, which eat all the waste. At the* back [of each bowl], *you have little holes, and the compost falls in the last bowl. The other way to do it is what we have in our garden. We just put waste in the compost, and we wait.* (Méline, 9, role-playing game)
	3.2 Recycling concern	*I'm a little bit interested in environmental problems and think that recycling is important for the planet.* (Mayeul, boy, 9, interview)

		To preserve the environment, we have to collect the waste. It's important to recycle. (Roman, boy, 8, interview). *I subscribed to a magazine talking about the environment. For me, it is important to protect the species in the environment that are in danger. I am also concerned about recycling. It's important to recycle to protect the planet. I've had the idea to create my own environmental club. I told my friends they can be members. And when one of my friends wants to be part of the club, I create a membership card with his or her photograph on it* (Lenny, boy, 9, interview) *I am interested in the environment. If I can do a bit more for the environment, yes, I'm interested in it. Thus, the Earth will live a little bit longer.* (Julie, girl, 9, interview) *Preserving the environment is about not destroying trees, vegetation. It's important. Also not wasting food. In addition, if we can, we prevent demolition. In my village, we nearly had a skate park, the big kids were keen, while the smaller kids didn't want it, because of the demolition of the house of one of our friends. Finally, the building of the skate park didn't happen. In addition, I organized the big day of my village's cleaning and recycling. I organized it personally* [she seems very proud of herself]. *We cleaned up the entire village, and collected all the waste on the ground.* (Julie, girl, 9, interview) *Recycling is useful and important for the planet.* (Méline, girl, 9, interview)

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Young children's consumer agency: the case of French children and recycling

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Highlights

- The study uses SCT to uncover distinct determinants of children's agency.
- Children are concerned and express knowledge about recycling.
- Family microenvironments and the organization of recycling impact children's agency.
- Children express proxy and collective agency in the family setting.
- Children are more likely to express a direct personal agency in other settings.