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Don't be a Waster! Student Perceptions of Recycling Strategies at an English University's Halls of Residence

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Abstract

Purpose:
This paper explores student perceptions of recycling, and explores whether one university’s strategy helped or hindered student recycling in their university's halls of residence. There is near-universal acknowledgement of the urgency of the climate crisis, yet household recycling rates remain low at 45.2%. Student-recycling rates have been suggested to be even lower. After a brief consideration of the recent history of sustainability and recycling, this paper identifies the actions required to increase student recycling, including peer influence, education and information, physical structures, and attitudes and motivations.

Design/methodology/approach:
Twelve in-depth, semi-structured interviews were undertaken at one Southern English university. The rich, qualitative data obtained were then analysed thematically. The theory of environmentally significant behaviour provided a framework for understanding perceptions and behaviours in that site.

Findings:
Confirming aspects of existing literature, students’ recycling behaviours were found to be limited through lack of perceived ability, lack of facilities and unconfident knowledge. Students were also found to be limiting their own actions. A holistic approach including peer influence, education and information, physical structures, and attitudes and motivations was recommended.

Originality:
There is little research into student recycling behaviours and limited literature concerning halls of residence, especially in the UK. This paper draws on one case to add to nascent understandings. Whilst limited to one site and by sample size, a number of recommendations are made, covering university facilities, student empowerment, and individual responsibility to increase future recycling.

Keywords: recycling, student attitudes, halls of residence, sustainability

Introduction

During the two years between 2017 and 2019, the number of individuals reporting the environment as the most important issue facing the United Kingdom (UK) rose dramatically. Eight per cent of respondents voiced concern for the environment in 2017, but in 2019 this had increased more than threefold to 25% (YouGov, 2019). However, under half of all household waste was destined for recycling plants indicating a lacuna between the attitudes of the population and its actions (Department for Environment Food and Rural Affairs [DEFRA], 2018a). The UK population is, of course, a heterogeneous group and recycling strategies are similarly varied (Holmes, 2015). This value-action gap, therefore, could be attributed to an individual's pro-environmental stance being hampered by current recycling strategies (Cho, 2019).

Students, at the beginning of their independent lives with the most formative years for pro-environmental behaviours upcoming (Robertson and Walkington, 2009; Whitley *et al*., 2018), will be vital to generating a more sustainable society in the future (SUEZ 2020). Research indicates that, in the 2019-2020 academic year, there were approximately 361,000 students occupying university-maintained property and over 175,000 in private-sector halls (Statista, 2021). Therefore, if strategies can be developed to promote sustainable behaviours this is likely to have significant impact for the future (Cleverdon *et al*., 2017).

Previous research examining student recycling provides important data but is quickly out-dated, often neglects halls of residence, and commonly is based outside of the UK. Furthermore, existing literature also lacks evaluation of existing strategies. This paper is set to rectify this by extending existing research and investigating student perceptions of recycling strategies in one English university's halls of residence. It is important to note, this paper was researched and written in 2019 and in the time since another, larger report has been published by the National Union of Students (NUS) and waste company SUEZ. It is encouraging to see the same conclusions being reached, for example, around convenience and the existence of a value action gap however, this does not detract from the originality of this paper. *Lifting the Lid* (SUEZ, 2020), with a small response rate of just 2.18% offers an outsider (etic) view of the student population. Whereas, this research offers an insider (emic) insight, adding confirmatory conclusions from a different perspective.

Background

> “You have stolen my dreams and my childhood with your empty words. And yet I’m one of the lucky ones. People are suffering. People are dying. Entire ecosystems are collapsing” (United Nations [UN], 2019).

Swedish climate activist Greta Thunberg called on the world to deliver a more ambitious response to the global threats of climate change at the 2019 UN Climate Action Summit in New York. Thunberg is not alone. Nature documentaries, climate protests by Extinction Rebellion and Fridays for Future, combined with a surge in Green Party representatives at local council level has raised dramatically the prominence of living sustainably, using resources carefully and recycling (Chaplin *et al*., 2014; Buryani, 2018).

Despite the widely acknowledged, importance of sustainable living (Kruger *et al.*, 2020), active engagement with sustainability remains relatively low amongst the general population (TNS, 2009). One reason suggested for this is the complexity and ambiguity of the term sustainability, and the resulting lack of definitional clarity (Robertson and Walkington, 2009; Portney, 2015; Aleixo *et al*., 2016). The UN defined sustainable development as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (World Commission on Environment and Development, 1987, p. 41). This definition is followed in this paper.

The 1987 report, *Our Common Future*, prepared the way for the development of the Sustainable Development Goals (SDGs) in January 2016 (UN, 2015). The 17 SDGs extended the commitment of the

international community to eradicating poverty, reducing inequalities and eliminating discrimination, and combined these with pledges to climate action, responsible consumption and partnerships. Despite criticism as voluntary and omitting the contributions and needs of indigenous communities (Yap and Watene, 2019), the goals have been credited with allowing governments to commit to ambitious targets without being held to account over them and highlighting the interconnectedness of environmental, social and economic factors (Pogge and Sengupta, 2015; Kroll *et al*., 2019).

The implementation of the SDGs is of vital international importance for the earth's survival. Experts predict irreversible climate change by 2030 without significant emission reductions (United Nations, 2015; Intergovernmental Panel on Climate Change (IPCC), 2018). At that point, the ability for this generation to meet its own needs, or the needs of future generations, will be seriously hampered by extreme weather, rising sea levels and extinction of species (IPCC, 2018). Therefore, there is an immediate need for sustainable actions to be implemented.

Recycling can offer positive impacts on sustainability. The European Commission have implemented waste targets regarding landfill and recycling and the Circular Economy Package (European Parliament Research Service [EPRS], 2016). The UK Government's strategy builds on this outlining measures such as ensuring consistency in collections, establishing a food waste provision and working with local authorities to improve recycling rates (DEFRA, 2018b). A waste infrastructure, in particular reference to recycling, has been well embedded into European and British life. Recycling has been identified as a high impact sustainable behaviour with significant areas for improvement (DEFRA, 2008; DEFRA, 2018b; Cho, 2019). Now the UK has left the EU, the Environment Bill 2020 introduces plans to move the UK to an increasingly circular economy by enacting a range of waste measures (DEFRA, 2020).

Despite the requirement to expand sustainable behaviours and the opportunity presented by recycling, individual household rates remain low at 45.2% of total household waste, similar across EU member states (EPRS, 2016; DEFRA, 2018a). Students are an important demographic to consider in terms of recycling. They are still formulating their ideas and behaviours and as such there are fewer negative norms to break (Robertson and Walkington, 2009; Whitley *et al*., 2018). As a result of this malleability, the behaviours of individuals around the student may be especially influential (Perrault and Clark, 2017a). Therefore, if one student can be encouraged to increase their sustainable waste management this may have a positive impact on their peers and family members, now and in the future (Watson *et al*., 2015; Perrault and Clark, 2017b). Also, students are the future leaders of business, politics and society and thus will play a key role in shaping a more sustainable future (Izagirre-Olaizola *et al.*, 2014; Kruger *et al*., 2020; SUEZ 2020).

When considering student recycling rates, research remains limited and fragmented. DEFRA reported that awareness of sustainability was lowest amongst individuals aged 16-25 when compared to other age categories (see Chaplin *et al*., 2014). Therefore, it could be anticipated that rates of recycling performed by students will be lower than the rest of the population. It has been suggested that despite initiatives encouraging sustainability on university campuses, knowledge and awareness of sustainability is not increasing (Perrault and Clark, 2017b). In addition to this, the Student Sustainability Director of university accommodation provider, Unite, suggests that despite students having the most knowledge of environmental issues, they are the most environmentally reckless (Chaplin *et al*., 2014; Cleverdon *et al.*, 2017; Cho, 2019; Kruger *et al.,* 2020). However, concern for climate change within the student population is high at 91% (SUEZ, 2020) indicating the presence of a value action gap between concern for the environment but lack of action to act (Cho, 2019) due to the perceived inconvenience (SUEZ, 2020) and requirement of knowledge (Cho, 2019)

There are several difficulties involved in researching recycling rates. For example, the definition of sustainability is complex, as we have seen, and so is knowledge of what can and cannot be recycled (Aleixo *et al*., 2016). Therefore, individuals could report they recycle every day but also regularly mis-categorise items, contaminating the rest of their recycling. Furthermore, it remains unclear how recycling 'often' is defined. Despite the limited pool of existing literature regarding students recycling behaviours, research examining factors encouraging students to dispose of their waste responsibly identifies several themes, such as the influence of others, education and information, physical structures, and attitudes and motivations, being the most common.

Current research

Influence of others

Most students are at a key point of change in their lives and behaviours are still forming. Thus, there is an opportunity to enhance sustainable practices (Robertson and Walkington, 2009; Whitley *et al*., 2018; Daub *et al*., 2019; SUEZ 2020). The influence of parents is an important factor; although the level of influence is disputed, with Robertson and Walkington (2009) and Watson *et al*. (2015) arguing parents hold more influence over student recycling habits, whilst Zhang et al. (2017) argue to the contrary. However, with around 70% of full time first year students living in halls of residence in this paper, we focus on the influence of fellow students rather than parents (Knight Frank, 2018).

The influence of housemates and peers represents a significant influence on student behaviour (Chaplin *et al*., 2014; Meyer, 2015; Saladié and Santos-Lacueva, 2016; Watson *et al*., 2015; Başev, 2016; Hay *et al*., 2019). This is likely to result from social approval or disapproval (Chaplin *et al*., 2014; Meyer, 2015), suggesting a portion of individuals are recycling, not because of their own pro-environmental stance, but because of the concern for social acceptance and the impact of peer pressure (Chan and Bishop, 2013; Cheung, 2018; Zhang *et al*., 2017) This is supported by SUEZ's (2020) research reporting that 10% of students, describing themselves as non-committed recyclers, were motivated to recycle by 'nagging'. Consequently, recycling behaviour is not solely reliant on individual attitudes nor those of peers but represents a complex interplay between the two and may affect self-reported behaviours rather than observed ones (Cheung *et al*., 1999).

As well as the influence of others in increasing recycling rates, the reverse is also true (Hay *et al*., 2019). Students' established recycling behaviours may be reduced if peers do not act sustainably, perhaps reflecting a belief that their efforts are wasted if others do not reciprocate (Chaplin *et al*., 2014). The influence of wider society's recycling habits is also influential (Mtutu and Thondhlana, 2015). However, it is argued that when an individual has strong feelings towards the environment, they will partake in sustainable behaviours such as advocacy, conservation and recycling whatever their surroundings (Watson *et al*., 2015). Attachment to others also matters. For example, a first-year student in halls of residence experiencing a lack of affinity towards randomly allocated flatmates will be minimally influenced (Başev, 2016). To encourage student recycling behaviours overall, a student-led approach is important, in which all students feel they are members of their wider community within their halls of residence.

Education and Information

It is reported that a higher level of general education increases environmental behaviours (Izagirre-Olaizola *et al*., 2014; Saladíe and Santos- Lacueva, 2015; Başev, 2016; Cheung *et al.*, 2018; Zhang *et al*., 2017). Meyer (2015) indicates that increases in student pro-environmental behaviours results also from informal education. Increased environmentally responsible behaviours are seen where sustainability and recycling reading materials are available for students in 'green dorms' (Watson *et al*., 2015). However, after completing coursework covering sustainability, 65% of students were unable to provide a sufficient definition of

sustainability, suggesting that informal education may be more influential than formal education (Perrault and Clark, 2017a). Other studies stress the importance of formal education (Clark *et al*., 2020), whilst Kruger *et al*. (2020) propose the use of both.

Regardless of the delivery, it is agreed there is a place for education and information in increasing sustainable behaviours (Daub *et al*., 2019; Kruger *et al.*, 2020). Environmental knowledge leads to the formation of attitudes and values which, in turn, may result in pro-environmental behaviours (Izagirre-Olaizola *et al*., 2014). The correlation between increased education, knowledge of sustainable behaviours and an increase in recycling is well documented (Zhang *et al*., 2011; Izagirre-Olaizola *et al*., 2014; Saladié and Santos-Lacueva, 2016; Zhang *et al*., 2017; Cheung, 2018; Whitley *et al*., 2018).

Despite the important role of education and information in increasing knowledge, a multi-faceted approach is needed as education seems ineffective on its own (Chaplin *et al*., 2014; Mtutu and Thondhlana, 2015; Perrault and Clark, 2017b). Educating for pro-environmental behaviours may change attitudes, but does not necessarily change actions (Zhang *et al*., 2011). A far more influential factor seems to be physical surroundings and for education to be effective it must be used in conjunction with other strategies (Pike *et al*., 2003).

Physical Structures

A key influence in motivating students to recycle is the ease of the process (Robertson and Walkington, 2009; Zhang *et al*., 2011; Wu *et al*., 2013; Mtutu and Thondhlana, 2015; Zhang *et al*., 2017; Perrault and Clark, 2017b; Cheung, 2018) with 25% of students reporting they only recycle when it is convenient (SUEZ 2020). This includes the availability, adequateness and proximity of facilities (Zhang, 2011; Chaplin *et al*., 2014; Izagirre-Olaizola *et al*., 2014; Saladié and Santos-Lacueva, 2016; Stoeva and Alriksson, 2017). When not in place, these factors create a significant barrier to sustainable behaviours.

It is difficult to judge the convenience of waste collections because of their heterogeneity. For some, this could mean the convenience of walking from a student flat to the waste facilities, for others, it could refer to the act of sorting waste into plastics, paper and glass, metals, which differs from location to location. As a result, it is challenging to draw concrete conclusions from existing research. However, the status of facilities remains paramount to increasing recycling rates prior to implementing other initiatives, as the satisfaction of infrastructure takes precedence over environmental attitudes. Thus, if a student has very strong feelings towards sustainability and environmental protection, but the facilities available to them are poor they may not recycle (Stoeva and Alriksson, 2017).

Attitudes and Motivations

When considering methods for increasing recycling rates, it is important to understand underlying factors currently encouraging individuals to recycle especially pro-environmental attitudes and motivations (Başev, 2016). Without an understanding of these influences', initiatives will have little traction (Saladié and Santos-Lacueva, 2016).

Attitudes supportive of behaving in an environmentally protective way are, understandably, a major determinant of active recycling (Izagirre-Olaizola *et al.*, 2014; Meyer, 2015; Başev, 2016; Stoeva and Alriksson, 2017; Cheung, 2018; Cho, 2019), although they do not always result in changed behaviours (Mtutu and Thondhlana, 2015). Therefore, efforts to improve recycling rates need to focus on extending positive attitudes through information campaigns, physical measures, (economic) incentives and administrative actions (Stoeva and Alriksson, 2017). When such attitudes are embedded as an environmental identity, the positive effects on recycling are likely to be more pronounced (Watson *et al*., 2015). As a result, some argue that the focus should be targeted at increasing environmental identities rather than simply changing attitudes (Cleverdon *et al*., 2017; Freed, 2018). However, attitudes and motivations towards environmentally beneficial acts do not exist independently. For attitudes to translate into behaviours, there also needs to be a mix of social pressures to be seen to be benefitting the environment, low perceived difficulties associated with recycling, and the presence of environmental beliefs (Chan and Bishop, 2013; Izagirre-Olaizola *et al.*, 2014; Freed, 2018). The effect of attitudes on pro-environmental behaviours is contested. But the majority of literature supports the idea that positive attitudes towards the environment increase recycling rates. Potential methods to encourage students to increase recycling, therefore, require a combination of the following:

- To feel part of a community, and feel every member of this community is partaking;
- To have knowledge, or be increasing knowledge;
- Accessible, convenient recycling facilities; and
- To have, or be developing positive environmental attitudes.

The data concerning sustainable behaviour and recycling is limited and, often, inconsistent. Our focus concerns students living in halls of residence as these are underrepresented in existing literature and offer a unique challenge in efforts to increase recycling rates. The research question we pose is 'how do students perceive the recycling strategies of their university hall of residence?'

Study methods

This research is based on twelve semi-structured, thematically analysed interviews with students living in self-catered halls of residence in one post-92 English university. A constructionist approach, which allows for increased fluidity within interpretations of the everyday world and knowledge of it, was taken to consider the differences and development of individual meanings (Kalof *et al*., 2008; Crotty, 1998; Bryman, 2016; Punch, 2014). Students were chosen to represent the range of different levels of study and different halls and this naturally created a range of ages between 18 and 30.

Phenomenological perspectives, examining an individual's everyday experiences and the methods by which meanings are constructed (Crotty, 1998; Kalof *et al*., 2008), is most applicable when exploring a small sample of students' meanings and attitudes towards recycling as sustainable waste management (Denscombe, 2017). Phenomenology appreciates the agency individuals hold, and recognizes, despite social pressures dictating a need for recycling, individuals do not always submissively comply (Denscombe, 2017). To gain an in-depth understanding of another individual and create an authentic description of their experiences, Bryman (2016) proposes assuming the viewpoint of the subject to fully understand their experiences (Denscombe, 2017; Denzin and Lincoln, 2011; Flick, 2014). When combined with the bracketing off of the researcher's presuppositions, or at least a reflexive recognition of the potential impact of them, a detailed understanding true to the subject's experiences can be gained.

Semi-structured interviews were used to gain in-depth perceptions and meanings and to allow increased reflexivity and flexibility in prompting respondents to expand on issues significant to them (Punch, 2014;

Denscombe, 2017). Questions were based around their knowledge and attitudes towards recycling and sustainability, the facilities in their halls of residence and the influence of others around them. The interviews were face-to-face and undertaken in an informal context and conversational manner. For their convenience, the location of interviews was chosen by the participants with the majority choosing the university campus and a few requesting the common area of their accommodation. Interviews lasted between 30-45 minutes. Participants were selected through convenience sampling to offset difficulties in recruiting participants with no interest in the research topic. Also, it was felt the benefits of having open conversations and building a consistent rapport with all participants, helped to prevent answers designed to please the researcher (Bryman 2016).

Ethical Concerns

Many participants were known to the interviewer (first author) prior to the interviews as friends or colleagues employed by the University's accommodation office. However, any potential biases and power imbalances were mitigated by clearly stating there would be no impact on the participant's studies or accommodation in an attempt to redress the power imbalance as a white, male researcher (Vähäsantanen and Saarinen, 2013). At the time of the research, the first author was a third year student at the university but not living in halls of residence. The relationship with students living in halls was created whilst employed by the university to promote sustainability and wellbeing. Ethical permissions were gained through Bournemouth University's research ethics review process (no. 30885). Informed consent, from participants, was ensured by informing participants about the aims of the research, their role within it, the benefits and how the results will be utilised. Participants were able to ask questions and reminded of their capacity to withdraw at any point during the interview. In addition, participants were reminded prior to the interviews that the research was voluntary and they could choose not to participate, and that participation would not have an impact upon their studies or accommodation provision. Anonymity was protected through the elimination of identifiable details (Punch, 2014).

Analysis and Presentation of Data

Data were collected as audio recordings, accompanied by notes of body language and other inaudible responses. Data were manually transcribed, whilst eliminating any identifiable information (Bryman, 2016). This was valuable in understanding the data as presented by participants (Denscombe, 2017). Once transcription was finalised, the notes recorded during the interviews indicating any pauses, gestures or other expressions were added to minimise the criticism that transcribing can lose additional meanings conveyed through non-verbal cues (Denscombe, 2017).

After completing the transcription, Braun and Clarke's (2006) framework for thematic analysis was used to generate themes from the data as it has a specific focus on reflexive/organic thematic analysis which allowed the analytic process to remain flexible and open (Braun and Clarke, 2006; Braun and Clark, 2019).

Analysis began with immersion into the data, achieved initially through the transcription, aiming to identify patterns and initial areas of interest before formal coding. Following this, potential themes were identified and re-examined to confirm coherence before naming the themes and completing the final written analysis of the most salient themes removing those that were on the fringes of responses Themes were identified inductively, aiming to stay as accurate to the respondents' perceptions as possible. Additionally, themes were identified at a latent level to go beyond a description of students' ideas surrounding recycling and understand their perceptions (Braun and Clarke, 2006). Bracketing of the researcher's views was performed throughout to maintain the validity of participants' contributions.

Findings and Discussion

This study developed an understanding of the interconnections between the themes within recycling strategies and student perceptions of these. Although individual themes have been identified and expanded, the role of a combined strategy cannot be understated. When asked about individual topics, in their responses many participants crossed between themes. For example, Participant E's response, when asked about posters provided by the accommodation provider, university and local council to promote and educate about recycling, touched upon the lack of information on posters, their own attitude towards recycling, attitudes of other students and staff (see Figure 1). One of the most striking messages to come from participants was the ambition to behave more sustainability, whilst acknowledging the limitations preventing this. We present four themes exemplifying the twelve participants' perceptions of the recycling strategy of an English university's hall of residence.

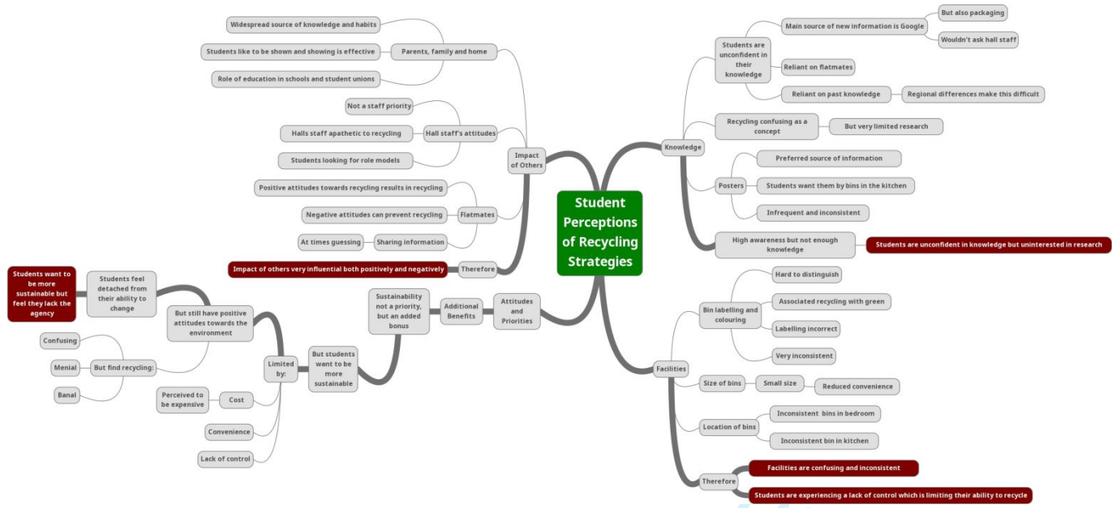

Figure 1 Student perceptions of recycling strategies

Limited by perceived lack of ability to behave sustainably

At a macro level, there is broad approval of sustainability and therefore, a pressure to behave in an appropriately sustainable manner (Chan and Bishop, 2013; Cheung, 2018; Zhang *et al*., 2017; Freed, 2018). Participants acknowledged this pressure but felt limited by their perceived lack of ability to achieve it, predominantly because of cost and convenience (see Perrault and Clark, 2017 who recognize this as a major barrier to recycling).

Throughout participants' responses, there were frequent references to the expense of behaving sustainably. Participant A remarked: *'it's that you care about sustainability, but it is so much more expensive'*. With Participant C suggesting, this is a perceived difference in price:

> *When I think of something sustainable, I think of it as being like oh my gosh it's £10 whereas if I got something that wasn't sustainable it would only be like £2. I just think of it [sustainability] as being so highly-priced.*

This creates difficulties for sustainable behaviour because students, *'need to go for cheaper alternatives and those cheaper alternatives might not always be sustainable'* (Participant M).

Convenience was also a persistent theme, with a suggestion that it was, at times, more convenient to behave unsustainably, *'some things we do recycle and some things we don't, and it basically depends on what is easier to clean'* (Participant D). This led into themes surrounding facilities and public provision of bins confirming research by Zhang *et al*. (2011) regarding convenience as a key motivation (see also Wu *et al*., 2013; Perrault and Clark, 2017b; Cheung, 2018).

Despite wanting to behave more sustainably and holding positive attitudes towards the environment, there was a view among nearly all participants that *'unfortunately, as much as I would love to say sustainability is at the top [of priorities], it would probably be least'* (Participant K). Participants' capacity to adopt sustainable behaviours was further limited by inadequate recycling facilities within their hall of residence.

Limited by facilities

Participants felt that the recycling facilities, especially the size, location, and labelling and colouring of bins available to them, hampered their efforts to behave sustainably. Participants spoke of the bins provided in their kitchens being too small. Participant B commented that *'the [recycling] bins we have in our flat are absolutely rubbish they aren't big enough',* thoughts echoed across participants. Consequently, participants made frequent trips to the bin store, increasing the inconvenience of recycling.

Participants had varying sizes of bins, with Participant K reporting *'in my flat I've got the small recycling bin and the general waste which is bigger'*. Therefore, further reducing convenience and creating the possibility that efforts to increase recycling rates were hampered by using either bin as an overflow, such as Participant A's flatmate who *'just uses whichever bin is free'*. The inconvenience participants face when emptying their recycling bins frequently is compounded by the exertion required. Not only did some participants complain that their recycling bins are too small, but another stated *'they're not very easy to carry because they're quite wide' (Participant F).*

The location of bins within their flats was also a limiting factor. Although the provision of a recycling and general waste bin in kitchens was well established, there were inconsistent arrangements within bedrooms,

which can be a very influential factor in an individual's motivation to recycle (Izagirre-Olaizola *et al*., 2014; Saladié and Santos-Lacueva, 2016). Many students were only supplied with a general waste bin for their bedrooms meaning recycling often did not happen, '*sometimes it's too much work to go to the kitchen and put the box in the recycling bin, so I just throw it away'* (Participant D). Participant J went on to explain *'we used to have bins, but I don't know what happened. They got rid of them, it's annoying.'*

Without recycling bins in a participant's bedroom, recycling is reliant on students themselves. However, as Watson *et al*. (2015) argues, while students with an environmental identity will recycle whatever their living environment, this cannot be assumed for all students. However, there were differing views on having two bins in bedrooms with Participant M concerned that *'in terms of the space you have in your room…having the small recycling could be interesting but I don't know if it would be used as much'*.

Another factor limiting recycling was bin labelling and colouring (Zhang, 2011; Chaplin *et al*., 2014; Stoeva and Alriksson, 2017). Despite widespread agreement that *'green bins identify it as recycling'* (Participant C), this pattern did not occur with the bins provided in their flats. For example, in Participant L's experience, *'a normal bin which is grey and the recycling one is black with a red lid… it's not clear and I think people don't really know"*. For others, both bins were the same colour (Participant G and H) with some participants reporting random combinations such as grey and white (Participant A) or black and blue (Participant B).

A solution to randomly coloured bins for Participant D has been demarcation, with some that *'are marked out for recycling bins'*. Whilst this is the case in some halls of residence, overall, bin labelling, similarly to colouring is inconsistent, and in some cases incorrect. For some, like Participant H, *'[housemate] wrote recycling in big letters on one…there were just two bins and we chose which one was which'*. For others, bins are already labelled, however, labelled confusingly. Participant G explained:

> *'in the kitchen, we have two bins. We've got food waste and then recycling, and people are really confused. Sometimes they put things into the recycling because it's not food but it's also not recycling. So, either the bins need to be better labelled or maybe there needs to be a third bin.'*

Consequently, many reported that inconsistent colouring and labelling of bins made it hard to distinguish between the general waste and recycling bins provided. Chaplin *et al*. (2014) propose that these factors form significant barriers to behaving sustainably and that is supported by this study. As a result of this confusion, some are labelling their own bins or making their own provision whilst others experience this as a lack of control over the facilities available to them and as such feel limited in their ability to recycle.

Limited by a lack of confidence

At an individual level, participants feel unconfident in their knowledge of recycling. Even in cases in which the participant went on to show a good level of knowledge later in the interview when asked about their knowledge, responses ranged *from 'Okay [hesitant] not the best…but not really bad'* (Participant E) to *'I'd say I know about it, but struggle'* (Participant C).

Participants wanted additional information and felt frustrated with the basic information provided in halls of residence. When asked where hall-specific knowledge on recycling came from, Participant A said *'they have posters and that's it'*. Supported by inductions, however, participants agreed that posters were their preferred medium to gain information, yet, they were critical of the current provision. Participant B said *'they never give me the in-depth information that I'd like to know',* whilst giving an example of best practice Participant F explained posters in their previous accommodation *'had the do's and don'ts of things you can't put in there'* adding *'they actually explain why'*. Many participants, such as Participant L, preferred posters which, in place of the text, had *'pictures of what is recyclable … like a bag of crisps, everyday objects'*. However, posters were infrequent, wrongly placed *'in the common room and a lot of people don't go in there'* (Participant G), and inconsistent *'I don't know if we still do, but we used to have posters'* (Participant J). Participants are looking for detailed, engaging posters and want these better placed.

Students' prior recycling habits have been guided by their parents, supporting the suggestion that parents hold the greatest influence over a student's recycling habits (Robertson and Walkington, 2009; Watson *et al*., 2015). When faced with the sudden transition towards living independently that university brings, participants wanted alternative role models. Participant M when looking for information explained they *"did ask a lot of hall managers"*.

However, hall staff were not providing the support students are seeking. They appeared to lack knowledge (Participant J), or be unapproachable or uninterested, *'it wouldn't be my first thought to ask them…it's not really knuckled down we need to recycle, we need to do this. So, it's just there really'* (Participant E). Overall, participants believe *'it isn't (hall staff) main concern […] I haven't seen it as a priority (for them)'* (Participant K). As a result, participants are reliant on their equally unconfident flatmates, creating a cycle of misinformation as Participant E explains *'someone might ask is this recyclable? And then someone says I would say so because I recycle it'*.

There was a general consensus between participants that as a result of the basic information, lack of role models and other societal factors, their lack of knowledge stemmed from finding sustainability to be a confusing concept. This was reflected in their attitudes towards it with Participant A exasperated with there being *'so many definitions of sustainability… I don't absolutely know what that thing is'*. A clear definition of sustainability is necessary to encourage recycling (Portney, 2015; Aleixo *et al*., 2016; *et al.*, 2020).

There was also confusion '*as to what types of plastic can be recycled'* (Participant L). Although there are schemes in place such as ASTM International's Resin Identification Coding System which provides the numbered triangles found on plastic containers (ASTM, 2020) usage was low with the view from Participant C that *'it's really confusing, and you have to actually look, I think it's a triangle or something but what that means I don't know'*. Complexity reduces involvement (Robertson and Walkington, 2009), but increasing knowledge and awareness is likely to increase recycling rates in these halls of residence (Zhang *et al*., 2011; Izagirre-Olaizola *et al*., 2014; Saladié and Santos-Lacueva, 2016; Zhang *et al*., 2017; Cheung, 2018; Whitley *et al*., 2018).

Self-limitation

Participants also limited themselves. Participants lacked confidence in their knowledge of recycling and found the concept confusing but only one did any additional research when arriving at their halls of

residence while others *'just carried on doing what I was doing before'* (Participant M).

This self-limitation is reflected in the participants' attitudes towards recycling but not in their environmental attitudes. Most participants held pro-environmental beliefs but this did not result in recycling countering Başev's (2016) argument pro-environmental attitudes encourage individuals to recycle. Despite recognition that recycling is an important part of creating a more sustainable future, there was a lack of recycling. Participants found it banal *and 'really menial and doesn't mean anything, like me putting cardboard boxes in recycling I don't get anything for it. There's no reward'* (Participant C). Sustainability was not always viewed as a priority, instead, more of an additional benefit, for example*, 'I will buy loose onions and stuff because for me it's just more financially friendly just because it goes to waste if I buy a big multipack [in plastic]"* (Participant B). Supporting the suggestion cost is important.

Participants also limited each other. Peer influence strongly determines student recycling behaviour and participants reported the positive and negative effect of peers and flatmates. (Chaplin *et al*., 2014; Meyer, 2015; Saladié and Santos-Lacueva, 2016; Watson *et al*., 2015; Başev, 2016). There were cases in which the effect of others in accommodation encouraged participants*, 'They are pro-recycling they support it […] most people try'* (Participant D). Nevertheless, the opposite was also true. Participant B recycled before attending university, however, felt, *'my flatmates didn't do it … they're just throwing rubbish into my recycling bin so I may as well claim it all as rubbish'.* This student had all the necessary facilities, attitudes and knowledge, yet, stopped recycling due to peer behaviour.

Participants feel limited in their ability to recycle in many ways:

- a perceived lack of ability to achieve sustainable ideals
- financial costs
- perceived convenience associated with not recycling
- by the limited size, location and labelling of bins
- by the infrequency, inconsistency and basic level of information supplied
- the lack of engaged role models to establish recycling behaviours

However, participants, at times limited themselves and each other through a lack of research, engagement and, in some cases, negative attitudes towards recycling.

Therefore, returning to the paper's opening remarks in which it was proposed the value-action gap could result from an individual's pro-environmental stance being hampered by current recycling strategies (Cho 2019), the gap, in the case of students in the university studied, has been shown to be in part due to the recycling strategy alongside other influential factors. It is important to note, these are not separate themes existing independently and the influence of themes on each other can be seen in the participants behaviour. Participants are making decisions, on recycling and other activities based upon structural limitations, regulations and processes and this manifests itself, to give an example, in the provision of the recycling facilities available to students. The suggestion that participants are limited by the surrounding structures, regulations and processes is a reflection and a potential explanation for the value action gap which is seen in the wider population between sustainable attitudes and sustainable actions.

Conclusion

This study explored student perceptions of the recycling strategies of an English university's halls of residence. The literature suggested four themes to which students' recycling behaviour could be attributed. These were a combination of the influence of others, education and information, physical structures, and attitudes and motivations. Twelve semi-structured interviews were conducted, and then analysed using reflexive/organic thematic analysis, to explore student perceptions.

Participants found themselves to be limited in recycling through their perceived lack of ability to be sustainable, their knowledge, physical facilities alongside limiting themselves, and each other, through a lack of interest in recycling. These findings corroborate existing research, especially surrounding the interconnectedness of recycling motivations. Involvement in recycling is low for a number of personal and contextual reasons. Most participants held generic pro-environmental beliefs and values. However, many did not hold strong positive attitudes toward recycling and the benefits, indicating that further research is needed to explore the relationship between macro beliefs and micro behaviours.

Whilst this study contributes to an understanding of student perceptions of recycling strategies it is not without limitations. Conclusions presented are potentially limited by the positionality of the interviewer (first author). As a friend and colleague to some participants, and a white male researcher to others, responses could have been affected by perceived expectations and power dynamics. In addition, the small-scale nature of the research limits it as does the small sample size, resulting in the possibility anomalies were not adequately identified. Yet, despite this, findings remain relevant. Protective measures were in place to mitigate and minimise any negative impacts from the interviewer. Also, the findings concern a specific hall of residence which may have resonance with other living situations and environments. It begins a dialogue in which a range of measures can be considered to increase potential and actual recycling behaviours.

Although this research is not generalizable, and the following recommendations are deliberately tentative to allow accommodation providers flexibility to consider local factors, this paper does offer techniques to enhance the recycling rates of future generations. As mentioned previously, the UK Government have identified recycling as a high impact sustainable behaviour with high potential for improvement (DEFRA, 2008; DEFRA, 2018b; Cho, 2019) and halls of residence are well placed to increase students' sustainable behaviours on a considerable scale. To achieve this, improvements to halls of residence recycling strategies should aim to provide a consistent and adequate provision of bins across the estate with clear labelling and colouring. Also, strategies should be established to empower students to make full use of their existing knowledge, supported by information campaigns to counter ideas that sustainability and recycling are costly and inconvenient. At an individual level, students need to engage with recycling strategies. Whilst not a solution to the current climate crisis, increasing recycling represents an important step in the process.

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