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The Use of Ethnographic Research in Product Development

A study on the grocery packaging problems of elderly people

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2011

Abstract

It is thought that one of the best ways to gain information for the development of new products and potentially the adaptation of older ones is through the use of ethnographic research during the development and research phase (Cooper & Edgett, 2008). The world's population is ageing and it has therefore become necessary to include elderly people more in the development of new products, particularly where research suggests they are encountering difficulties with grocery packaging, among other products. Product developers need to find solutions to these problems.

The ethnographic research used in this study has been valuable in finding out what the problems are that elderly people are experiencing; how they are overcoming or getting around these problems, as well as what could potentially be done to develop appropriate solutions. It was found that elderly people are having difficulties with more traditional styles of packaging, like glass bottles, jars and aluminium cans, as well as some newer packaging types including ring-pull tin cans and freshness seals on milk bottles. These results are similar to those of previous research in this field (Duizer, Robertson, & Han, 2009) . Based on this ethnographic research and the above mentioned survey, it has been found that the current guidelines in place for packaging (shown in Table 1) are inadequate from an end users point of view, given that they focus primarily on function and environmental impact and less on openability. An adapted version of the Principles of Universal Design (Appendix VIII) would be immensely beneficial in helping to make the packaging industry more aware of the packaging problems elderly people are faced with, as well as ways to circumnavigate them.

Summary

This research project was made up of two main parts: ethnographic fieldwork, and a survey of the elderly and their use of packaging. The survey consisted of a number of questions aimed at finding out what sort of relationship elderly people had with grocery packaging: how often they shopped; which packaging types they preferred; which ones they had difficulties with; and other packaging problems they encountered. By having a researcher accompany participants around the supermarket, it was possible to gain a rare insight into the participants' experience of an everyday shopping trip. This allowed the researcher to see first-hand what sort of packaging the participants bought, and question them about their choices

The survey found that the participants were shopping frequently - one or more times a week and that most of the participants asked for help when opening difficult packaging. It concluded that the most problematic packaging type were glass jars, ring pull tins, ring pull bottle tops, and aluminium dinking cans.

This ethnographic research also showed that, in addition to the problems mentioned above, the elderly encountered problems with blister pack-style packaging and child proof closures. While the survey showed that the elderly experienced only moderate difficulty with freshness seals - like those found on more recently developed milk bottles, the ethnographic research revealed that all participants experienced problems with these. Only through the observation of the participants in the supermarket and during ensuing conversations were the researchers able to understand the difficulties the participants were facing and learn about the various tools they used to overcome these. All of the participants used tools (from tools designed for specific packaging problems to knives and scissors) of some sort to open difficult packaging. Furthermore, the findings of the research suggest that there are a lot of problems related to the communication of product information on labels due to the labelling being either hard to read or difficult to decipher.

The research also showed that the guidelines currently in place in the packaging industry are far from suitable in aiding in the minimisation of problems elderly face when opening packaging. These guidelines place minimal emphasis on end-usability and more on the function and environmental impact of a given product. It is therefore clear that changes need to be made to ensure packaging is designed to be more user-friendly and with increased openability, while still containing the product adequately (E.g. restrictions on the amount of force needed to open lids, and surface area guidelines for packaging parts that need to be gripped in order for them to be opened).

A set of universal design principles for the packaging industry needs to be developed so people will be able to access a package's contents easily. The aim of packaging is to contain and preserve a product, not to prevent the user from gaining access to it.

Acknowledgements

I feel it is important to remember that when a job is all said and done and all that remains is the result, with no real trace of the time, patience and effort it took to complete, it is important to acknowledge the people involved.

As she well deserves, I would like to express my gratitude to my supervisor: Dr. Aruna Shekar, for her time, patience and support, along with the occasional (and much needed) push in the right direction. Without her help this final report would not exist.

I would also like to thank Tom Robertson for his informative support, as well as Leonie Lander for her help in the early stages of planning the research methods and in developing the structure of how to proceed with this research.

I would like to also take this opportunity to thank all the people who participated in the study and who have allowed me to gain an insight into part of their lives. Without their willingness, none of this research would have been possible.

It would also have been impossible to write this thesis without the help, support, and guidance of those who I have in my life. Thank you to all who know me, have stuck by me, pushed and prodded me and helped me in one way or another to succeed.

Last, but in no way least, I would like to thank my family and friends, as in the end they are the ones who have picked me up when I have stumbled and fallen along the way and have always been there to remind me to believe in myself.

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1. Chapter 1 - Introduction and Overview

1.1. Introduction

One of the main aims of this research has been to show the benefits of using ethnographic research methods which are underutilised in Product Development (PD), compared to the more readily available surveying methods that are so often favoured by researchers today (Cooper & Edgett, 2008). This research has focused mainly on the problems which elderly people are faced with when opening packaging as well as the coping mechanisms they have used to overcome these problems. The problems that elderly people are faced with in opening grocery packaging, is very much an issue that PD needs to take into hand. A packaging item is developed to contain, store, sell, and keep the product inside fresh. However, when the packaging hinders the consumer from accessing the product they are paying for, it becomes a problem. And this, in turn, is a problem for the product developers who create the packaging.

Due, in part, to the baby boomers' era, and improvements in health care over recent decades which mean people are living longer (Statistics New Zealand, 2009a; Austrailian Bureau of Statistics, 2009; Office for National Statistics, 2010), the elderly population is growing at a fast rate. A 14% increase in people aged 65 and over is predicted to occur by 2051 (Statistics New Zealand, 2007). It could be argued that this aging population will need to be supported by the rest of society in one way or another in the future. Indeed, research suggests that many elderly people encounter problems accessing the products they buy and often need to ask for help, but changes in family structure over the last 100 years means the elderly don't always have the familial support they need. It is therefore possible to assume that an increasing number of people will have difficulty accessing these products on a day-to-day basis. .

An in depth review of the literature in the field reveals there is a distinct lack of ethnographic research in the area of Product Design. One of the main aims of this study was to look at the benefits of using ethnographic research to find out what types of packaging problems elderly people have and how they are affected by these problems. It is this researcher's thought that it is much more effective to use a modified ethnographic research method where participants are observed as well as questioned in their natural environment that a standalone survey for participants to fill in.

A survey has been used in this project to support the information gained from the ethnographic research method used, and to highlight the differences between these methodological approaches. Ethnographic research has been found to gain a wider range of information with more depth and scope than a survey as it is used to find out what people are thinking as well as what they feel through observing them in their natural environment.

For the purpose of this study 10 participants were asked to take part in ethnographic research where they were accompanied on a shopping trip to their local supermarket and asked questions while they went around the store. The questions were related to any product they bought and the packaging they were in, as well as some packaging types that were know to be difficult to open for the elderly.

Both the ethnographic and survey research showed that elderly people had great difficulty in opening a multitude of grocery packaging types, most of which they would face on a daily basis. Opening jars, bottles, ring pull tins, child proof lids and freshness seals, just to name a few, caused the participants many difficulties.

1.2. Importance of Topic

This study has attempted to identify the packing problems experienced by the elderly and to develop steps that can be taken to overcome these problems. The study has also been used to show the differences between ethnographic research (observation-based research) and survey-based research. The product development industry tends to use surveys as their primary research method, though research has shown that ethnographic research is much more effective (Cooper &Edgett, 2008; Kleef, Trijp, & Luning, 2005).

Only in recent times, due to a growth in the elderly cohort of the population, have researchers become more aware of the difficulties surrounding the elderly in their everyday lives. However, the difficulties the elderly face opening certain packing types appears to have been largely overlooked or ignored by grocery production companies. What the more commonly used research methods fail to produce is wider, in-depth information on what consumers want and need because most research methods tend to be directed by a pre-selected set of questions, and these questions could ultimately shape the results. What more common research methods such as surveys and focus groups often fail to capture is an insight into the participants' lives (Rosenthal & Capper, 2006; LeCompte & Schensul, 1998).

Ethnographic research, which will be defined in Chapter 2.2, looks at observing participants and finding out more about how they interact with their environment, and in this case packaging, and causes for the problems they may be having.

1.3. State of Current Research

As discussed above, quantitative research methodologies such as surveys and focus groups have been favoured in Product Development, but ethnographic research has been mentioned in a few of the relevant texts as being a very useful - though time consuming - method. This research includes a study done by Cooper & Edgett (2008) on different design methods and their benifits and uses, and Rosenthal & Capper's "Ethnographies in the Front End: Designing for Enhanced Consumer Experiences" (2006), which looks at using ethographic research in the design process.

The range of information looked at in these studies includes ethnographic research as a whole; ethnographic research in PD and it's benefits and draw backs; types of consumable grocery containers and the people who encounter problems with them; and the increasing number of elderly people in society and the problems they encounter with packaging.

It is estimated that by 2051 the percentage of people aged 65 and over in New Zealand will have risen from 12.3% to 26.3% (Statistics New Zealand, 2007). This increase means that more people will need to be supported in one way or another by the rest of society.

Ethnography takes an in-depth look at people and the lives they live in relation to the environment they are surrounded by. Researchers used to immerse themselves in a community and study them for several years. In this day and age, this is no longer feasible as it takes up too many resources (LeCompte & Schensul, 1998). It is even less feasible in today's fast paced PD environment as research information needs to be able to be obtained quickly and effectively so that PD is up to date and the products produced are sellable.

The limited ethnographic research that has been done in PD has been undertaken in the areas of Marketing, Design, and Consumer research. This has enabled these sectors to gain valuable information on how products are used by individuals in their natural environment (Malefyt, 2009). Cooper and Edgett (2008) argue that ethnographic research is one of the most effective methods used in PD to find out what the consumer wants (Cooper & Edgett, 2008).

Research on elderly people has shown that the needs of the elderly need to be taken into consideration when developing new packaging. A study overseas has shown that elderly people will shop more often, which influences the size of the products that will be bought, as well as how much is bought each time (Arber & Hunter, n.d.). This study also shows that some of the factors that influenced elderly people in their grocery purchasing decisions included supermarket layout; portion size; food cost; storage; personal mobility; and parking facilities at the store (Arber & Hunter, n.d.) . This study concluded that price, quality and taste were rated as "very important" or "extremely important".

In a previous study at Massey University (Duizer, Robertson, & Han, 2009), price was rated as the most important factor, for the elderly, when considering groceries. This was followed closely by safety, size, and recyclability. Colour, shape and versatility were found to be the least important in this study (Duizer, Robertson, & Han, 2009). It was also found that Glass Bottles and Jars were the most liked packaging type.

The little amount of information available on packaging related incidents showed that most accidents occurred while trying to open packaging with some sort of tool like scissors or a screw driver, or by cuts occurred after having dropped a glass bottle or jar (Winder, Ridgway, Nelson, & Baldwin, 2002).

A study completed by Yoxall, Janson, Bradbury, Langley, Wearn & Hayes in 2006 found that “an average 70 year-old has similar strength to that of a 10 year-old child”, and that most of the problem which elderly people faced when opening packaging was due to a lack of strength and/or dexterity. Other health problems that have been linked to problems with strength and dexterity include arthritis, muscle wastage and loss of mobility (Age Concern, 2009).

1.4. What this Study set out to do

It was important that the project outcomes would include proof that ethnographic research is more effective in early stages of PD and market research than the traditional survey methods, as well as a set of design criteria by which packaging can be designed with the elderly in mind. In order to be able to accomplish these objectives, the study had to be designed to find out what sort of grocery packaging caused problems for the elderly as well as the degree of difficulty they faced and how frequently.

1.5. Field Research Problems

The point of the research was to gain information on the problems elderly people faced when opening grocery packaging.

As with any research project, one of the main problems that researchers are faced with is finding suitable, reliable and valid participants that are indicative of the target group being investigated. In order to do this a group of elderly participants needed to be identified who ranged in age from approximately 65 to 80 years who displayed a range of physical ability.

Each individual participant had to be treated as an individual but also led along a predetermined research plan so that information gained from one accompanied shopping trip was comparable to the next.

1.6. Statements

This thesis highlights the differences between ethnographic research and quantitative survey based research and aims to demonstrate where surveys fall short of the potential that ethnographic research has in the area of PD.

This type of research has worked exceedingly well in finding out what types of packaging problems elderly people are faced with when trying to open groceries. It looks at the problems elderly people face when trying to open packaging as well as how they overcome these problems.

The following report looks at all the aspects in question in detail, including ethnographic research as a whole, and then its applications and its usefulness in relation to PD.

Information is gained through literature research as well as practical research. The practical research was made up of two parts: a modified ethnographic study as well as a survey. It was found that the information gained from the ethnographic research was much richer and lead to more details about the participants' problems being revealed. More information was gained on subjects that were not directly asked (as is the case with surveys) as the participants were much more open to sharing added information on their problems to a researcher in person, where a rapport had been established, than they would disclose on a survey.

It was found that elderly people have a lot of problems with the opening of everyday grocery items, problems with packaging types that they did not have problems with in their earlier stages of life due to a decrease in strength as well as health (Torrens & Huxley, 2001; Steenbekkers & Beijsterveldt, 1998).

2. Chapter 2 – Literature Review

In order to review the use of ethnographic research in identifying the extent of the problems elderly have with packaging as a whole an extensive literature review was conducted into ethnographic research in PD as well as the problems which elderly people were faced with in packaging as well as inclusive design as a whole.

The literature research covered the following areas:

- Ethnographic research as a whole and what it entails
- Ethnographic research in PD - the associated benefits and drawbacks -
- Participant Observation
- Designing for Elderly Consumers
- Packaging types and related principles
- Elderly specific packaging problems

2.1. Product Development and Design

2.1.1. Human Factors

The main focus of the area covered by human factors in product development is the interaction between people and the product. It looks at both the influence of people on products and vice versa to find what interactions are in place and what can be done to minimise areas of stress. Human Factors studies aims to minimise, if not eliminate, these stresses in order to make the interaction between human and products problem free, safe and enjoyable experience (Fisk, Rogers, Charness, Czaja, & Sharit, 2009) as well as efficient and effective.

Although growing old may lead to limited perception, cognitive abilities, and the reduction in the ability to control movements, ageing needn't be considered in a negative light" Rather, there are positive aspects to the ageing process such as increased experience level, and a broad range of worldly understanding (Fisk, Rogers, Charness, Czaja, & Sharit, 2009); all of which can help to minimise the negative effects.

2.1.2. Universal Design Principles

Designers have long used a range of guidelines and principles to help them in their quest to produce products which meet consumer and producer requirements in one. Although there are a range of variations on universal design principles, they all seem to follow one key aim.

That is, "The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"

(Connell, Jones, Mace, Mueller, Mullick, Ostroff, Sanford, Steinfeld, Story, & Vanderheiden, 1997)

The Universal Design Priciples have been developed with the consumer's useability in mind, so that a product is in theory useable by all. There are seven main priciple points that make up the set and each of them looks at a different aspect of usability design.

The principle points are:

- **Equitable Use**
  The design is useful and marketable to people with diverse abilities.
- **Flexibility in Use**
  The design accommodates a wide range of individual preferences and abilities.
- **Simple and Intuitive Use**
  Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
- **Perceptible Information**
  The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
- **Tolerance for Error**
  The design minimises hazards and the adverse consequences of accidental or unintended actions.
- **Low Physical Effort**
  The design can be used efficiently and comfortably and with a minimum of fatigue.
- **Size and Space for Approach and Use**
  Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

The above are the basic version of the principles (Connell, et al., 1997). A full set is included in Appendix VIII.

2.2. Ethnographic Research

2.2.1. Ethnographic Research in General

2.2.1.1. History of Ethnographic Research

Traditionally a method unique to Anthropology, ethnography was used to learn about human cultures. It was not until around the mid 20th century that ethnography was adopted by other disciplines such as Sociology. Ethnology has since become synonymous with the study of participants (Kelly & Gibbons, 2008).

Ethnography evolved from anthropology when it became apparent that looking at the structural make up of humans was not enough; religion, language, survival knowledge as well as other aspects that are socially defined as culture also needed to be looked at. Kelly and Gibbons also state that "ethnography is interpretive in nature and focuses on the symbol within a culture. Rather than simply describing what a researcher sees in a research setting, an ethnographer seeks to understand what those observations *mean*" (Kelly & Gibbons, 2008, p. 281).

Ethnography takes an in depth look at people and the lives they live within the environment that they surround themselves with, whether by choice or due to circumstance. In the early to mid 20th century, ethnographers would have compltely immersed themselves into the community they were trying to study for years at a time. However, this method has become less and less feasible as it involves a commodity that has become harder and more valuable to allocate: time (LeCompte & Schensul, 1998).

In order to maintain the validity of ethnographic research without the need for continuous immersion in a community, researchers have been focussing on certain areas in the research and minimising their scope – similar to looking at the night sky through a telescope and focussing on one area (LeCompte & Schensul, 1998).

As well as this, LeCompte and Schensul (1998) have found that, if the focus of the research is a known problem for the community or people under study, then the researcher is more likly to gain greater access to, and cooperation from, the participants. The subjects' cooperation can prove invaluble, as without it, the information gained from ethographic reaserch can be near impossible to gain, if not rendered invalid. A bond therefore needs to exist between researcher and participant in order to gain insight into the way that the members of the group/community live their lives.

2.2.1.2. Ethnographic research in Industry

It could be argued that, over the last few decades, there has been an increase in the number of ethnographic applications in companies where it tends to be used in marketing, design and consumer research (Malefyt, 2009). It was concluded that ethnographic research methods appear to appeal to designers as they reveal an insight into the actual use of a product, and not just what the designer thinks it will be used for (Malefyt, 2009).

“In marketing, anthropology (as well as ethnography) has been used to understand brand image and social symbolism, brand loyalty, consumer behaviour and social organisation, interpreting consumer stories, shopping and holiday gift giving” (Malefyt, 2009, p. 201), which, when understood, can prove invaluable to companies searching for that elusive bright idea.

In industry, ethnographic research can provide invaluable information. Due to the rapport a researcher will usually be able to establish between themselves and the participant, information gathered can often show a unique view of the situation as an individual/group perceives it. For this reason, the relationship between the researcher and the participant, which can often be familiar and personal, is key. Each research participant needs to trust the other to both provide and record information openly and honestly.

2.2.2. Ethnographic Research in Product Development

Although the idea of using ethnographic research in New Product development is not a new one, little research has been done in this area. There has been a lot of research on ethnography as a general topic, but there does not appear to be much on its use in the NPD process. The little research that has been undertaken indicates that it is a very effective way in which to find out what the consumers/users need from a product. This could be because it appears to give researchers the greatest insight into users’ unaddressed and unarticulated needs (Cooper & Edgett, 2008).

This stems from Robert G. Cooper and Scott J. Edgett’s research “Ideation for product innovation: What are the best methods” (2008), in which it was stated that the use of ethnographic research is the most effective method for ideation. This research also states that it is one of the least used methods, with only 12.9% of firms extensively using it.

Recent research conducted in 2008 by Cooper & Edgett on different methods of ideation for product innovation looked at 18 different voice-of-consumer methods and compared them with regards to popularity and effectiveness. Ethnographic research in PD was ranked 13th in popularity, though it ranked first when it came to effectiveness. It is interesting to see data like this where an apparently effective method appears to be unpopular. . Cooper & Edgett (2008) and Grudin & Pruitt (year) argue that the extensive amount of time needed to conduct ethnographic research may be one of the reasons why it is not an overly popular method in PD. It is thought, however, that seeing as ethnographic research is the most effective method for PD ideation that it should be more popular.

Almost all research found regarding ethnographic research in PD suggested that it was a useful tool to find out what the consumers actually thought of the product as well as the way in which they would use products. Research which was done by Jonathan Grudin and John Pruitt in 2002 for Microsoft looked at using personas instead of scenarios when undergoing product development. They say that by using personas, designers can often

be forced to look at areas which may have been previously overlooked when using scenarios, like the social and political aspects which many designers may not want to look at but which play an important part in influencing how, where and by whom a product will be used (Grudin & Pruitt, 2002).

2.3. Participant Observation

Ethnographic research can be described as the observation of participants in their natural habitat and cultural environment. A person's culture, demographic, religious views, the way in which they grew up and where they grew up, as well as which era they grew up in, all influence the person they were, are, and are to become. Ethnography is the study of the person in their world and all it entails. Participant observation looks at the way in which people behave and why, which may aid researchers in understanding their motives better (Spradley, 1980).

Spradley (1980) has stated that every event, every moment in life we ever partake in, is like an act in a play. Each of these acts / social situations are made up of a place (the physical setting), actors (the people who are part of the social scene), and activities (what is actually being done). As with acts in a play, these social situations can be observed as such. Spradley also states that it is best to observe each situation individually although similar situations can be grouped together.

Situations tend to be grouped into the same categories that make up the social situation; social situations tend be grouped according to the place, people, or activities that occur. For this study, the grouping has occurred by the activity as well as the demographics of the participants (actors). This allows the data recorded to be grouped and compared accordingly.

The best way in which to find out about the true situations in the environment you are studying is to become part of the environment you are studying. Spradley (1980) states that you need to be unobtrusive; "A tall white westerner is going to stand out like a sore thumb amongst a native pigmy tribe". Whence it was decided that the best method of gaining information from elderly participants was to go shopping with them as a friend to gain their trust and ask them questions during and after the shopping trip.

2.4. Designing for the Elderly

When looking at designing for the elderly and the design principles that would apply, 'elderly' and 'ageing' first need to be defined .

'Ageing' is technically the process of getting older. Ageing is often perceived in a negative light, but is simply a fact of life, given that we are technically ageing as soon as we are conceived. . Becoming 'elderly' therefore needs to be looked at in a different light. We are all ageing and becoming old and, unless for some reason we die prematurely (before we reach an undefined "ripe old age"); we will all someday be known as elderly. Adinda Freudenthal (1999) also suggests that the changes as we age are not necessarily negative and that a lot can be gained from the experiences life has to offer.

The thing that needs to be remembered is that the ageing process has both a positive a negative side. Literature shows that human strength peaks at around 25, give or take a few years, and then starts to decline around 40 (give or take 5 years) (Shephard, 1998; Unknown, 2010). As a person's physical and cognitive capabilities decline, their life experience increases. "Doctors Ashley Nunes and Arthur Kramer of the University of Illinois at Urbana-Champaign found that the experience of older air-traffic controllers compensates for any age-related decline in mental acuity" (ScienceBlog, 2009) and that older air-traffic controllers are just as able to avoid head on collisions as younger ones. The main point of the study showed that older workers can be just as capable as younger ones as long as they have the necessary experience to back them up. In the case of problems that older people face with packaging and other product problems, it indicates that with the right knowledge about the product, elderly people may be able to overcome many of the problems they face while trying to open packaging by changing the technique, to ones requiring more brains than strength.

In the same study, it was noted that "Older controllers also issued fewer commands than younger controllers, while achieving the same results. According to the researchers, older controllers acted 'in a more measured fashion to achieve performance that rivals that of their younger counterparts, who exhibited better cognitive ability.'" (ScienceBlog, 2009).

The process of ageing will affect us all. Some effects are more measurable than others; loss of strength, for instance, is one of the more measurable characteristics. Two studies which have looked at this have found that there is a significant decrease in the amount of strength that an individual is able to apply to a jar lid as the person gets older (Steenbekkers & Beijsterveldt, 1998; Torrens & Huxley, 2001).

As always it is easier to study objects, organisms, and in this case, people, if they can be grouped. Stereotyping is "a widely held but fixed and oversimplified image or idea of a particular type of person or thing" (Oxford University Press, 2010), or in layman's terms, a way of grouping certain individuals by common traits. The changes that take place as we age have allowed society to associate old age with certain negatively perceived physical and mental characteristics. However it is not in old age when our physical and mental health starts to decline. It has been shown that, on average, a person's top physical performance is reached at the age of 22, and mental performance at the age of 27 (Taylor, 2009).

Another thing that needs to be considered when designing products and packaging for the elderly is how that product/package will fit into their everyday lives. The way in which elderly shop may be influenced by the frequency of their shopping expeditions as well what they shop for. Studies overseas have shown that elderly people tend to shop more frequently. A study performed on 43 individuals in Europe showed that 93% of those studied went shopping at least once a week if not more (Arber &Hunter, n.d.). This study showed that some of the factors that influenced elderly people in their decision making

while shopping for food included: supermarket layout, food cost, portion size, storage, personal mobility, and parking facilities to name a few.

The questionnaire indicated that 'Price', 'Quality' and 'Taste' were rated as "very important" or "extremely important".

2.5. Packaging

At this point it is important to clarify what was being looked at in this study. People tend to share the same or similar ideas as to what constitutes 'packaging'. Oostendorp, Bode, Lutters and Houten (n.d.) define 'packaging' in the following way: "The primary functions of packaging are to protect the product inside, to make it possible to distribute the product and to inform stakeholders in the entire packaging chain about the product that is inside. Furthermore, packaging should provide the user a safe and healthy way of obtaining, moving and storing any number of goods involved in their daily lives.

As mentioned above, in the past, containers and packaging were meant for exactly that purpose: to contain and pack within. They were designed to preserve perishable contents or prevent harmful products from getting out. As packaging has evolved from being a simple object in which to contain a product, to something that in itself is often more appealing than the product, the packaging's openability has also become an important factor. In recent times, the focus of packaging has moved away from what the *manufacturer* wanted (which was cost and impact on the customer), and has moved toward what the *consumer* wants. A big driving factor for the consumer is openability. It appears that, as packaging has evolved, problems have evolved alongside them, where there is often ambiguity as to how a pack should be opened resulting in frustrated consumers (Yoxall, Janson, Bradbury, Langley, Wearn, & Hayes, 2006).

2.5.1. Types of Packaging

In New Zealand the main type of packaging used in the food industry is not glass or a type of resin but paper/paperboard. Simple boxes and cartons and other such packages made out of this material accounts for 48% of all of our food packaging (Stilwell, Canty, Kopf, & Montrone, 1991). Furthermore, packaging is no longer just glass jars and bottles, tins, cardboard boxes and wooden crates; the list now includes containers with pull tabs, Tetra Paks (with and without plastic pourers and foil pull tabs), "easy open" tins with pull loops, and as well as this, there are tamper-proof and child-resistant openings that a lot of adults have trouble opening. In short, packaging has become more complicated and is often accompanied by poor instructions on how to open them, which can hinder more than help.

2.5.2. Packaging Principles

The Packaging Council of New Zealand has a code of practice that aims to ensure that all new packaging being developed, as well as older packaging under view, should reduce waste more that it creates it.

Its Key Principles are:

Key Principles	Considerations
1. Packaging Functionality: Packaging should be designed to meet market and consumer needs while minimising net environmental impact in a cost effective way	Meet technical performance requirements Meet consumer needs and expectations Use of appropriate materials Labelling and symbols to help re-use, recovery and recycling
2. Resource Efficiency: Packaging should be designed to minimise the use of materials and other resources without compromising product quality, safety and economic viability	New product development (NPD) process Existing packaging review Minimise materials Transportation (supply chain) efficiencies Water and energy efficiencies
3. Low Impact Materials: Packaging should be designed to minimise the environmental and social impact of materials and components. Materials should be selected incorporating a whole-of-life approach	Re-usable packaging Post consumer recycled materials Recyclable materials Materials from renewable sources Degradable materials Risks associated with hazardous materials Locally sourced materials Materials from responsible suppliers
4. End-of-Life Options: Packaging should be designed to minimise the environmental and social impacts of its disposal	Recovery for recycling purposes Recovery for composting purposes Energy recovery Landfilling

Table 1 Packaging Key Principles (The Packaging Council of New Zealand (INC), 2010)

Most of the principles in the above table are not related to the usability of the product. Only one point in the above list mentions “consumer needs and expectations”. “The Code” of packaging as it is called in the writing is mainly relating the packaging development back to recyclability and waste production rather than the end user response to the packaging. The Code of Practice mentions “Consumer Needs and Expectations” and looks briefly at the increasing use of smaller portions, and special needs packaging – for child-resistance, as well as a brief look at the need to take changes in the demographic of society (such as the ageing population) into account.

2.5.3. Packaging Related Accidents

Common causes of packaging related accidents include ones where a tool of some sort was utilized (E.g. . a knife or other hard object; cuts caused by glass where the jar or bottle was dropped during opening; excessive force applied to try and open the packaging; cuts and punctures from tin can edges and injuries relating to jars or bottles which are placed in hot water to try and get the lid off (Winder, Ridgway, Nelson, & Baldwin, 2002). As well as this, opening packaging can often result in muscle strains and bruising (Strauss, 2001).

It appears that packaging in its self is not necessarily the culprit when it comes to packaging related accidents. Rather, a great number of incidents arise from attempts to

incorrectly open troublesome seals. A consumer's risk appears to increase as their frustration increases as they use "increasingly risky strategies" with each failure (Winder et al., 2002). Information has shown that 39% of accidents which occur with packaging occur during it's opening (Strauss, 2001). Furthermore, research indicates that females, especially the elderly, (i.e. those over 65), are more likly to have problems opening packaging, oweing to them generally having less strength than males, and, therefore, are at more risk of an accident (Lewis, Meardi, Yoxall, & Langley, 2007; Winder et al., 2002).

2.5.4. Elderly and Packaging

There is a major problem in that there is a distinctive difference in information that is given by people during a survey and information their actions which can be seen during. (Individuals are often not aware that they behave in certain ways with products or packaging and this is what ethnographic research is trying to bring to the surface. It is the behaviour that is not readily noted by the user - the subconscious, almost automatic actions - that ethnographic research is able to identify.

Often the people who are having trouble with opening packaging are those with reduced strength and or dexterity. This not only includes the elderly generation, but those with forms of muscle degradation and other disabilities. "An average 70 year-old has similar strength to that of a 10 year-old child" (Yoxall et al., 2006, p. 219). The average age of most Western societies is also increasing as we are now living longer and having fewer children. Indeed, "Estimates indicate that by 2020 50% of the UK adult population will be over 50, hence the average strength of the population is decreasing" (Yoxall et al., 2006, p. 220).

2.5.5. Elderly Specific Packaging Problems

The main problems with most packaging types are that they are designed for the able bodied people of the world; are often designed so that children cannot get into the product; and/or are made tamper-proof for shelf life and product safety reasons. There are obviously good reasons for designing packaging in this way, but the packaging itself is continuing to cause problems for elderly people.

A study conducted by Lewis, Meardi, Yoxall, & Langley (2007)., which looked at the amount of torque needed to open glass jars and screw-top bottles, reported that "males and females 61-70 will have no problem opening the bottle (except when oil is present)", but "females in the 71-80 age group will probably have difficulty". They also found that the maximum amount of force that could be applied is dependent on the diameter of the packaging.

As people age their health tends to deteriorate. They lose dexterity in their fingers and often suffer from degenerative conditions such as Osteoarthritis, Rheumatism, and muscle degeneration. These problems make it harder for the elderly to perform everyday tasks that they could have previously performed without difficulty. Opening packaging, for instance, which usually requires both strength and dexterity is no longer as easy is it

once was. One of the main reasons why openability is becoming more and more relevant in today's society is that there are more people who are having difficulty with the packaging. This could be due to the fact that, in general, in the Western world, we are surrounded by an ageing population (Giles, 2006; Office for National Statistics, 2010; Australilan Bureau of Statistics, 2009; Statistics New Zealand, 2007).

Testing needs to be conducted in order to ensure that an entire target market can actually open the product in question, otherwise it may severely decrease the market if it is proven that people will not buy packaging they have difficulty with or cannot open. Yoxall and associates (2006) also say that "food packaging should be able to be opened by all customers, regardless of age or physical ability (p. 220).

2.5.6. Elderly Health Problems

It is widely accepted in the relevant literature that a person's physical ability peaks at around 25 (give or take a few years), plateaus at around 35-40 and then declines at an accelerated rate. Most people will have lost 25% of their peak ability by the age of 65 with further decline occurring as their age increases. As we get older the loss of strength caused by the ageing process causes many daily tasks to become more difficult.

As people age their bodies tend to let them down in several areas; some common health problems amongst the elderly include:

- Decreased muscle strength and flexibility

  As we age, like most other species, we tend to slow down, not doing as much physically as when we were younger and not as active in our environment. This leads to the loss of muscle, strength and flexibility. . Weaker muscle means the body is able to do less, in turn causing further muscle loss.

  Yoxall and his associates are not the only ones to identify the links between strength and age. Their study on the openability of jars and the strength required to open these found that "A 70 year old is as weak as a 10-year old boy and only 65% as strong as a 20- year old" (Torrens & Huxley, 2001)

- Reduced balance and co-ordination

- Decreased sense of well being and improved mood and self-esteem

  The most obvious result of the physical problems is to develop self doubt; problems with self-esteem and mood changes. If you're unable to do something you were once able to do and find you now need to ask for help with it, it may affect your self-esteem

- Increases in the occurrence of depression and anxiety

This can be due to coming to terms with one's inability to do certain things that he or she may once have taken for granted, as well as recognizing ones immortality. This can increase dramatically if an elderly person loses a spouse and/or is moved from the familiar settings of their own home to a retirement village of some form.

- Increased risk of suffering from cardio vascular disease, cancer, osteoporosis, Rheumatism and diabetes.

  Generally as a result of ageing and lifestyle choices made earlier in life the body will start to suffer

  (Age Concern, 2009)

- As well as this, a major problem that affects elderly people is loss of eye sight

  This can lead to problems deciphering the instructions on the packaging: the size of the pack; the number of servings; and the nutritional information (Winder, The Design of Packaging Closures, 2004).

Freudenthal (1999) simply lists the ageing person's abilities as "Ageing human capacities" which looks at individual human abilities especially certain movements which an able bodied person may take for granted. For instance:

Maintaining balance; reaching; lifting; climbing stairs; bending; getting into a car; strenuous physical exercise; squeezing (for instance, a utensil to open jars); turning and squeezing simultaneously (for example caps on bottles or jars); Pinching and pulling simultaneously (for instance tabs on packaging); fine motor skills, such as operating small thumb wheels and knobs, and embroidering.

Freudenthal goes on from the more physical abilities to mental ones which include memory and learning capabilities which have a larger affect on people's lives as they get older and are no longer as physically able as they once were (Freudenthal, 1999).

3. Chapter 3 – Ethnographic Research

Ethnography literally means “writing about groups of people” although more specifically it looks at the culture of those people. All people, as well as some animals, can be characterised by specific behavioural traits which they share, transmit, change, accept and or reject (LeCompte & Schensul, 1998).

3.1. Defining Principles of Ethnographic Research

Ethnography traditionally looks at people in their own environment and how they relate to that environment and the people around them. “A critical element of ethnographic research for Malinowski (1992) is participation in the lives of the people being studied” (O'Reilly, 2005, p. 13). This refers to spending time with and getting to know the participants by observing and taking part in their everyday lives, thus developing a trusting and respectful relationship.

Ethnography, like most qualitative research methods, is very fluid and flexible and able to adjust to the way in which subjects react to the situation they are naturally involved or strategically placed in. Just because ethnography needs to be agile and flexible does not however automatically imply that it is without boundaries and without guidelines. The key to ethnographic research, as all literature has indicated, is to observe not influence. In order to get the most out of ethnographic research it is important the researcher does not just *observe* the subject, but rather does so with a clear set of research objectives and guidelines in mind relative to what he or she hopes to gain from the experience (O'Reilly, 2005).

Thus it is clear what needs to be recorded, observed and also what is of importance and what is not – although as a rule it is better to note more rather than less as information can always be omitted but often not remembered as clearly after the event.

3.2. Benefits and Strong Points of Ethnographic Research

There are many benefits of ethnographic research, not least of all its ability to show how a group of people actually behave, rather than what they *say* about their behaviour.

The main benefit of ethnographic research appeared to be a more concise translation of how a group of people relate to a subject than traditional surveys. By watching people in their own environment we can obtain a greater insight into their feelings about something than by giving them a piece of paper to fill out and assuming that they will give us the truth.

3.3. Weaknesses of Ethnographic Research

One of the main drawbacks - if not the main drawback - of traditional ethnographic research is that the participant often did not know they were being observed. The problem with just observing participants is that there is no way of telling what they are thinking or feeling.

3.4. Use of Ethnographic Research in Product Development

It appears that, although ethnographic research has been mentioned in a few pieces of literature, and evidence suggests that it is a useful and accurate method to help with ideation in product development, it is not widely used in the real world. It appears that the main reason for this is the amount of time needed to effectively gain information through ethnographic research (Cooper and Edgett, 2008. Other research supports the use of ethnographic research in industry as designers and developers like using it as a tool to gain an insight into the actual use of a product (Malefyt, 2009). Further research into the area showed that the use of ethnographic research during the design and development phase of the product life cycle was able to provide a more in-depth look at what the consumer wanted to gain from a product as well as needs that they may not have been aware of (Rosenthal & Capper, 2006).

4. Chapter 4 – The Ageing Population

4.1. Introduction

We as a society are getting older (Giles, 2006). There is a global trend which is showing that the number of elderly people aged 65+ in on the increase. Medical advancements and the higher quality of life we lead in Western society are allowing humans to lead longer, happier lives. Furthermore, Westerners are having fewer children than they used to, which is increasing the median age dramatically (Statistics New Zealand, 2009b).

As time changes the decisions made by previous generations in regards to child bearing are taking their toll. The timing of child bearing and family size is having a profound effect on the ageing experience of individuals. Decisions that were made in the 1960s and 70s when the baby boom was going on are coming to light. Add to this the changes on partnering patterns, education, savings, the labour market and the lack of job security and you are left with generations who will be looking for social support that will not come as people age. With a lot of the working class having difficulty looking after themselves and making ends meet, how will they be able to accommodate and take care of the aged (Statistics New Zealand, 2009b)?

4.1.1. Ageing Population in New Zealand

In New Zealand in 2008 just over 1.2 million people were over the age 50, Where as it has been predicted that by 2051 50% of New Zealand's population will be over the age of 45 (Nikiel, 2008).

The last census was conducted in 2006 and it revealed that 495,603 were over the age of 65 in that year (Statistics New Zealand, 2007).

That is a total of 12.3 % of the total population. Although that may not sound like much, it is estimated that due to the baby boomers, who are now heading to their 50's, this will increase to 17.5% by 2021 and to 26.3% by 2051.

In short, it is estimated that just over ¼ of our population in New Zealand will be over 65 by this time. It is also estimated that, by 2051, the median age of the population (that is, 50% of the population will be younger and 50% will be older) will be 45.9 years. The drastic shift in age distribution can be seen when the projected median is compared to the current median age of 35.9 years.

Such a large change in the age of our population will mean that a larger number of people will need to be considered when designing packaging for society as the makeup of society is changing (Statistics New Zealand, 2007).

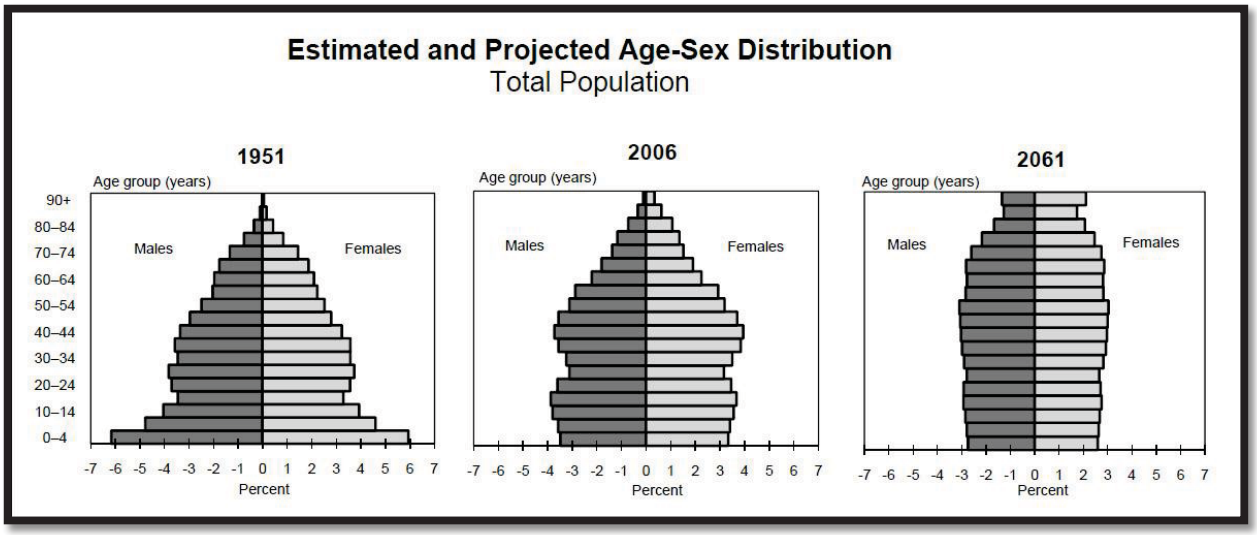

Table 2 Estimated and Projected Age-Sex Distribution New Zealand (Statistics New Zealand, 2009a)

It is often stated that people should view longevity positively rather than negatively; indeed, aging is a double-edged sword, but the problem that arises with people living longer is that the burden falls to the younger population who are responsible for looking after the elderly. The emerging older population structure means that the smaller population of younger people who may already be in, or are entering the workforce, will be the ones who will be looking after the elderly whether it is directly or through their taxes. This is where the increasing elderly population will cause the most problems. Their longevity needs to be funded by the young. There is, however, evidence to suggest that the elderly will not be a burden to society as there are plenty of jobs for those aged 65 and over that benefit society as a whole. With more time freed up after retirement they may be able to do more jobs for those working, like cleaning, child minding, gardening and data processing, to lighten this burden (Statistics New Zealand, 2009a).

The increasing number of elderly people will need to be looked after by someone. Statistics have shown that in about “25 years, the 65+ population will have doubled and age dependency ratios will have risen from 1 person (aged) 65+ for every 5 people aged 15-64 years to 2 people (aged) 56+ for every 5 aged 15-64 years” (Statistics New Zealand, 2009a). Although this is initially thought to be a potential burden to society there is data to show that it could be beneficial. The 2006 census has shown that 10% more people aged 65-69 were involved in unpaid activities outside their homes.

The table below (Table 3) shows the wave of people who will be 65 and over in coming years, and table 4 shows how that wave of 65+ will then increase the number of 80+, 20 years after that.

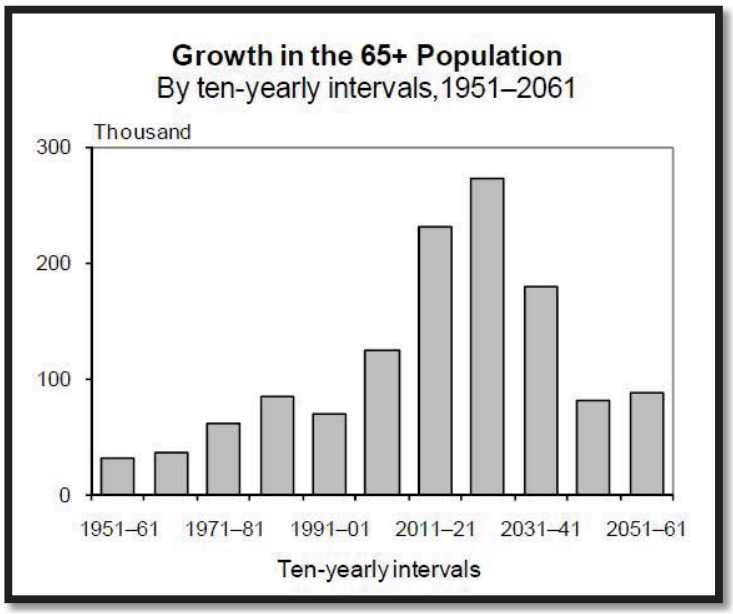

Table 3 Growth of Population 65+ (Statistics New Zealand, 2009a)

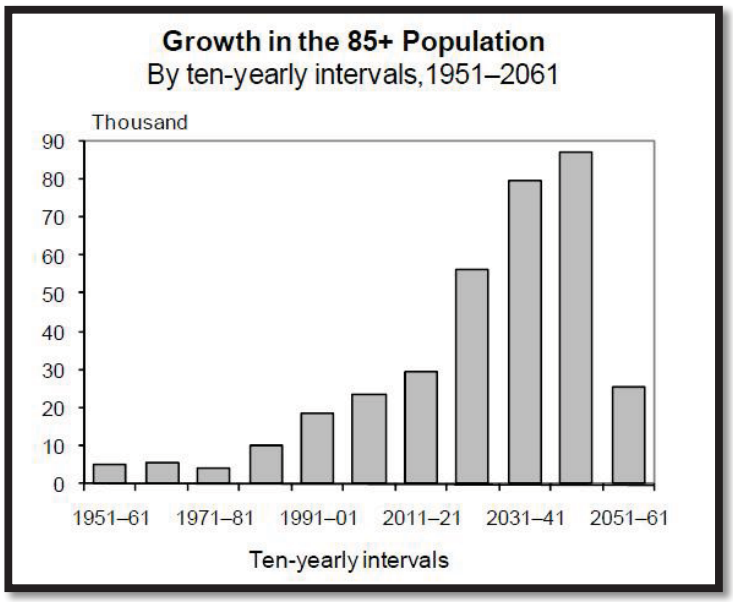

Table 4 Growth of Population 85+ (Statistics New Zealand, 2009a)

4.1.2. Trends in Other Countries

It is not only New Zealand that is being affected by an ageing population but most other developed countries as well. Part of this shift in the age distribution of developed countries can be attributed to the low fertility rate and increased life expectancy. As a result we have fewer children being born while the average age continues to increase. There was a rise from 11% in 1989 to 13.3 % in 2009 of Australians who were 65 and over (Australian Bureau of Statistics, 2009).

Population aged 65 years or more, Australia - At 30 June

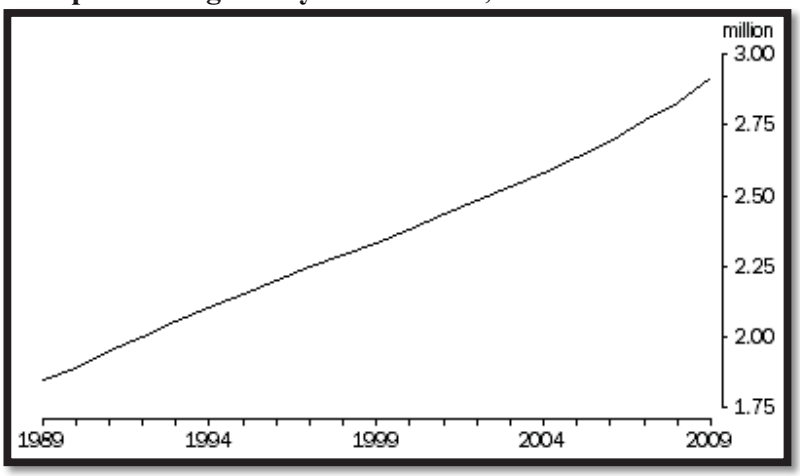

Table 5 Number of people aged over 65 in Australia 1989 to 2009 (Australian Bureau of Statistics, 2009)

The percentage of older people is expected to rise as there are a lot more people 40-65 now than in 1989 and this is the age group that will be advancing into the 65+ group in the next 20 years (see table 5 above). The Graph below (Table 6) is a good indicator of just how much the population demographic of Australia has changed in the last 20 years. There is a clear shift in numbers: there were considerably less young people and more elderly people in 2009 than 1989. And the tipping point appears to be around 40 years.

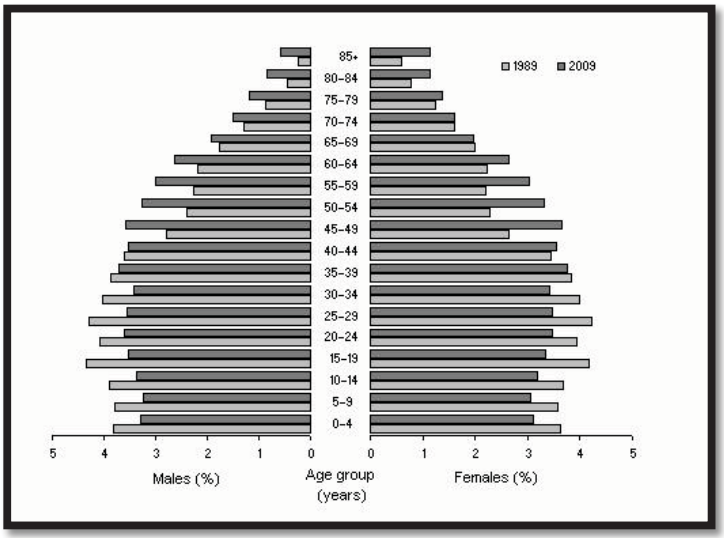

Table 6 Percentage of people in a given age group in Australia 1989 compared to 2009

(Australian Bureau of Statistics, 2009)

As can be seen in the image below the UK is showing the same trends.

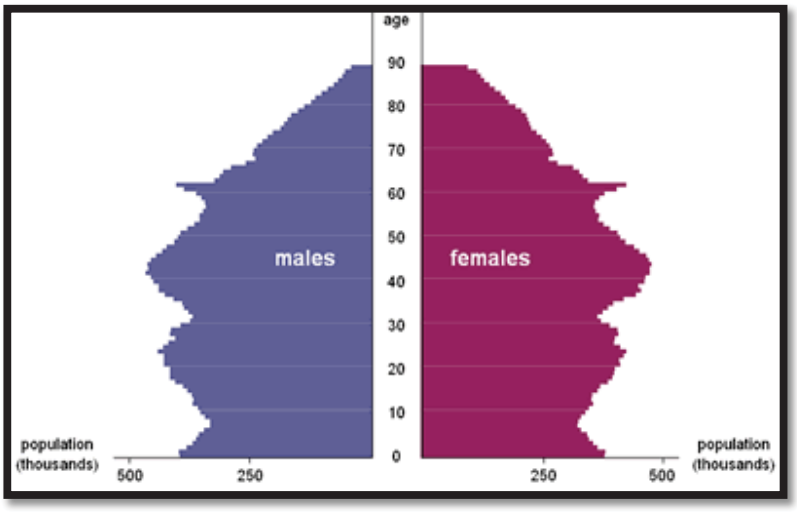

Table 7 Population of the UK by gender mid 2009 (Office for National Statistics, 2010)

"In mid-2009 (in the UK) the average age of the population was 39.5 years, up from 37.3 in 1999" (Office for National Statistics, 2010), an increase of almost 2 years in the median age in a decade, and it is still rising. As table 7 shows, the population of elderly people is just waiting to increase from the bulge from around 35 years to 50 years which is a result of the 'baby boom' year in the 1960s and 70s, which are now heading towards retirement.

4.2. User Profile

4.2.1. Demographic of People in this Study

In order to group the people that are being studied in this project their general attributes and demographics must be taken into account.

This research looks at elderly people aged 64 and older as this is considered to be the start of 'old age' by many sources (Fisk, Rogers, Charness, Czaja, & Sharit, 2009; Freudenthal, 1999; Green, 2005; Statistics New Zealand, 2007). The ethnographic research part of this study looks at those aged 70-80 (with the exception of one who asked to participate in the study because of her problems with packaging), and the survey looked at a larger range of people aged 65 and above.

The criteria for participants were that they had to be living by themselves and unassisted in their daily lives. As well as this, they needed to be doing their own shopping. Participants in retirement villages or units were included but they needed to be living in a non reliant way; (i.e. they were not reliant on others to perform general daily duties). One of the participants required help with leg dressings but was independent aside from this, (E.g. "although requiring periodic medical assistance for dressing of a leg wound, this study considered the participant "independent", i.e. capable of caring for them self and purchasing their own groceries). Therefore, the participant was included in the study.

4.2.2. Health

As we get older our ability to do everyday tasks decreases. Coordination, strength and dexterity are often among the first things to suffer as our bodies and minds begin to age, although more often than not it is the body that deteriorates before the mind.

The need to adapt packaging to better suit the elderly population is due not just because of the large number of those currently aged 65 and beyond - although as research has shown this group currently encompassed around 12.3% of the population (Statistics New Zealand, 2007) - but because the percentage of people over the age of 50 is growing at a tremendous rate.

This increase in the number of elderly people will mean that more people will have difficulty in their day to day tasks, such as opening certain packaging, than before.

5. Chapter 5 - Research Methodology

5.1. Introduction

The implementation of ethnographic research methods in the study of packaging problems was chosen as it has been thought that it would be one of the better ways of gaining information in this field.

By using ethnographic research methods to observe elderly people while they go about a typical shopping session in the supermarket it is considered that behavioural characteristics in relation to products that are bought due to packaging can be determined. After going on the shopping trip with a participant the researcher was encouraged to talk to them further about their packaging choices as well as ask if they could take a look in their pantry to see what types of packaging they generally kept in storage.

The ethnographic research was designed in a way so that it would have little or no effect on the everyday life of the participant. The researcher worked around a time that would suit the participants and went along with them to their normal shopping centre to make them feel as comfortable as possible.

A further survey was designed so that the differences in the information gained from both the survey and the ethnographic research could be looked at and also so that one could back up the other.

5.2. Objectives

1. To determine the nature of the problems elderly people are having with packaging and to identify possible solutions

2. To compare packaging problems elderly are faced with by using ethnographic research instead of a survey.

3. To determine whether or not the elderly will forgo products in problematic packaging in favour of ones that are easier to open.

5.3. Preliminary Decisions

Much of the decisions for the research method came from researchers who had previously done something similar to that which was about to be undertaken, but had used other research methods, and by looking at the literature that was available and how it suggested that ethnographic research should be conducted.

The research was structured in a way that was believed to be well accepted by the participant group. Originally the idea was to use a traditional ethnographic research method which primarily involves the observation of subjects/participants without their knowledge. However, observing people without their knowledge raises many ethical issues so consent is needed from participants in any study.

How can we gain consent from people without influencing the way in which they behave afterwards? Of more concern is the fact that the participants who are being studied are elderly and, generally more set in their ways, can be mistrusting of anything new. As such, it was thought that observation without knowledge would be too complicated.

The method that was to be used had to be able to gain the trust of the participants in order to find out what the elderly really think of different packaging types. Only once this trust was established would it be possible to observe the difficulty the participants encountered with the various forms of packaging and to discuss this with them as it was occurring (Spradley, 1980).

Each individual needs to know that their opinion is valued and that they can freely express themselves so that they will talk openly to the researcher.

It is also highly important that the researcher observes the participants actions and body language as there may be something they are thinking or feeling that they may not verbally express but communicate in other ways (Spradley, 1980), like facial expressions and their visual reaction to a product. Often the participant may not even be aware that they are communicating their feelings in other ways.

5.4. Methodology

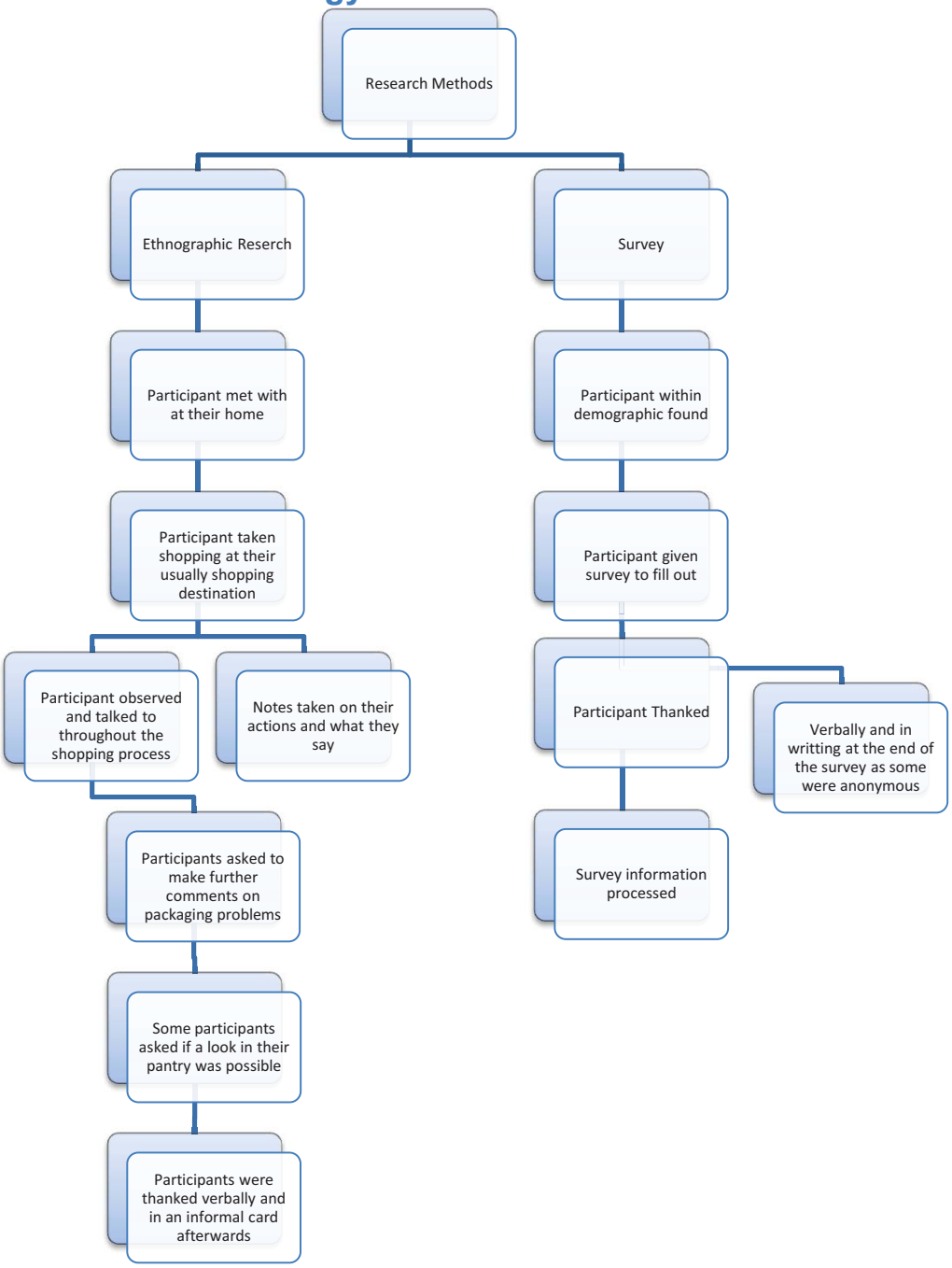

Diagram 1 Research methods used

Above in Diagram 1 is a representation of how the research method was carried out. It shows the makeup of both the ethnographic research and the survey.

5.4.1. Ethnographic Research

In order to go about this the right way and make sure that all information was valid and was of worth, the researcher first had to be able to gain the confidence of the participant

so that they would open up about how they felt about packaging and the types of problems they had with them.

In order to find participants for this part of the study an advertisement was placed in the Age Concern newsletter on two separate occasions, asking for people aged 65 and over with packaging problems to come forward (see Appendix IX). This is the age group that had first been the intended target group. It soon became evident, however, that the target sample had to be widened slightly. There were people enquiring about taking part who were younger than the 70-80 years initially specified in the advertisement. It became clear that by limiting the age group in this way the data would both include people younger that were also having troubles with packaging.

So although most of the participants for the ethnographic part of the study were aged 70-80, exceptions were made for a few who were younger but had extreme problems with opening packaging due to dexterity issues.

Each individual was met at their residence and was then accompanied on a shopping trip by the researcher. This allowed the researcher to get to know the participant a little before they were immersed in the research.

Participants were accompanied around the supermarket by the researcher who recorded what was said either in note form or using a voice recorder.

Talking to the participant as they went about their shopping provided the researcher the opportunity to ask participants questions on the spot so that they could find out what they were thinking as the considered the various products.

The researcher's discussion points included:

- How often they shop?
- How much they tend to buy (maybe in number of bags)?
- How they get to and from the super market?
- What types of groceries do they tend to buy?
- Do they buy a lot of tinned foods?
- Are there any package types they favour/avoid?
- Have they ever not bought a product because of its packaging?
- Have they ever not bought a product because they could not get to it on the shelf?
- If they cannot reach a product do they ask for help?
- Have they ever gotten a shop assistant to open a package type and reseal it while in the store?

As well as this, they were asked about their problems with certain types of packaging that were known to be problematic:

- How did they find glass jars?
- Did they have problems opening tins (both the conventional and the ring pull tins)?

- Did they find any freshness seals on packaging to be problematic?
- What about child proof openings?

Participants were informed that they did not have to buy things just because the researcher was commenting on the product. They were to go about their shopping as usual but make comments on packaging of products that they saw on the shelves whether they bought them or not. They were also asked to comment when they made the choice of buying one particular type of a product, such as tinned tomatoes by Pam's instead of Delmaine, and what their reasoning for this was: price, taste, brand etc.

The researchers accompanied the participants around the whole store, from aisle to aisle, so as to make sure that all packaging types were covered.

After the shopping trip the researcher then sat down with the participants in a relaxed environment, either at their home or a cafe, and talked about some of the things that had been observed and further discussed any packaging problems that the participants thought were relevant, as well as any reasons for the problems. Participants were asked if they had any health issues that may add to their problems with packaging and also whether they had any tools that they used to aid with opening problematic packaging.

Photos were then taken, with permission from the participant, of packaging they found especially difficult to open, as well as of any tools they used to make opening packaging easier. Some of the participants also allowed the researcher to examine and take photos of their pantry. This will indicate the type of products, and therefore packaging, they usually buy.

5.4.2. Survey

A copy of the survey that was used for this research as well as a copy of the one it was based on has been included in the appendices.

The survey was aimed to show what sort of problems elderly people had with packaging in a more visual form. The strength of a survey lies in the fact that it can show facts and figures in a user friendly way.

A survey of eight questions was developed to find out what sort of problems the elderly had with packaging and whether or not they liked or disliked common packaging types.

Each participant was informed that all their personal information would remain confidential as would as any information they gave in the questionnaire. They were also informed that any information they gave would not be linked back to their name or person when the data was collated and reported on. Participants were informed of this twice; once in an introductory letter to the study and the survey, and once again on the front page of the survey (Both can be viewed in Appendix V).

Although the survey did ask for the age of participant, they were able to give the answer in either a direct or non direct answer. Participants were asked to either give their age in

years, or to circle the age group they fell into. The age groups given were: Under 65; 65-69; 70-75; 76-80; and 80+. This way, those who did not want to reveal their age were not required to and there was no reason for them to feel uncomfortable.

Like with the ethnographic research, participants were approached and treated with respect. The aim was to ensure participants that information would remain anonymous and that they could choose to retract their participation at anytime. By making the participants feel at ease, the answers were going to be a more honest representation of what people thought.

The participants for the survey were gained in a range of ways. The surveys were handed out to the participants of the ethnographic research to get extra information from them. As well as this they were distributed to a local hearing centre where the elderly could be selected to take part. Another way in which participants were gained was for the researcher to attend the Prescott club. The club offers elderly a chance to socialise as well as providing a hot 2 course meal and entertainment for the morning. Some of the surveys were handed out to interested parties at the club.

Those participants that were not able to or did not want to fill out the survey at the time when the researcher was present were given an envelope addressed to the researcher with postage included. This way they were free to complete the survey in their own time and send it in without cost to themselves.

The surveys were completed for the most part independently, although most of the participants had the researcher there so they could ask questions if they were unsure about any of the survey questions.

5.4.2.1. Question Topics

One of the questions looked at the product attributes and how important the participant thought they were to them. Participants were asked to rate attributes on a scale of 1-5 where 1 was “not important at all”, 3 was “didn’t matter”, and 5 was “very important”.

The product attributes were: price; safety of packaging; size of pack; recyclability; opening type; storage; label; brand; versatility (can you store it in the fridge, a backpack, etc.); materials the pack is made out of; shape; colour; quality/freshness labelling; and other.

A further question in the survey asked the participants about their likes and dislikes regarding grocery packaging types. This referred to the packaging only and there was a note above the question reminding the participant of this.

Participants were asked to rate each packaging type on a scale of 1-5 where 1 was “dislike very much”, 3 indicated “neither like nor dislike” and 5 represented “like very much”. The packaging types that the question referred to were: Glass bottles and jars; Zip-lock bags; Tin cans; Foil packages (potato chips and biscuits); Plastic packaging on

cheese blocks; Cardboard boxes (cereals etc.); Tetra paks (card board containers that custard and some milk-products comes in); Aluminium cans; plastic yoghurt pottles; and cellophane.

The other main question looked the packaging problems that the participants had. They were asked to say how often they encountered problems with the following grocery packaging: Aluminium drink can ring pulls; ring pull like on ginger beer or Macs beer bottles; resealable bags (like nuts come in-); Twist off cap (like on Juice and older style milk bottles); screw off lids (like on jam glass jars); heat sealed foil bags (like potato chips and biscuits); Pull out ‘ pop the top’ closures (like on a water bottle); freshness peel off seals (under milk tops and juice tops); ring pull tins (tuna, baked beans, pet food); and conventional tin cans. Participants were given a scale of 1-5 where 1 was “never”, 3 equalled “sometimes” and 5 was “very often”.

The survey also asked how often they shopped as well as whether they had ever asked for help opening difficult packaging.

For each of the main section questions, participants were asked and encouraged to expand further on their thoughts and add anything that came to mind in addition to the products, packaging or problems that were listed in the question. The last question then gave participants another opportunity to add anything they thought was important and or comment on anything they wanted to.

5.5. Ethics Approval

Approval for the research was gained on the 27th February 2009 and a copy of the form has been enclosed in Appendix II, as well as the original letter sent in for approval, Appendix III.

5.6. Research Purpose

This study looked at problems elderly are faced with concerning packaging. Ethnographic research will be used as a means to find out whether or not elderly consumers will buy a certain product in favour of another because of the packaging and whether they may forgo a more favourable product for one which is easier to open.

Although previous research has been conducted in this field, it is thought that its being survey-based research meant the elderly were not necessarily aware of choices they may be making on a more subconscious level. To gather richer information on the problems elderly people are faced with when opening packaging, participants need to be spoken with and observed in context, that way all information relative to the products is fresh in their minds.

5.6.1. Exploratory

The initial research focused on looking at what areas related to ethnographic research in PD; in the context with elderly people. In the literature review, research was looked at in order to find where information might be lacking and what could be improved on.

Searches were conducted on internet article databases to find out how much information was available on previous ethnographic research in general and more specifically in relation to the elderly population.

Ways in which participants for the study could be recruited were looked at, as well as the best way to gain information from participants.

5.6.2. Descriptive

It was important to define the population that was to be looked at. In order to do so the term elderly was defined for the purpose of this research project as 65+. This group was then further divided into sub groups in order to organise and relate to the data gathered.

However, age was not the only factor that needed to be considered as age alone would not determine the ability of a participant to open packaging. Impaired physical ability as well as lifestyle and general well being were also factors.

5.6.3. Explanatory

In order to find out why elderly are shopping in a certain way, as well as what that way is; a survey has been developed to find out how they relate to the packaging world around them.

The survey, which was based on one previously conducted by a Massey University student (Duizer, Robertson, & Han, 2009) (but which did not provide any conclusive evidence), was rewritten to be user friendly and modified along the way in order to make it easier to understand.

5.7. Research Approach

5.7.1. The Qualitative versus the Quantitative Approach

The whole basis for this research is to show that Ethnographic research as a method for Qualitative research is more suited to getting valuable information from elderly people in regards to the problems with grocery packaging than surveys (quantitative).

The review of literature has demonstrated that ethnographic research methods resulted in a richer, deeper information source than surveys as they often bring to light finer aspects of a research subject that traditional surveying methods miss (O'Reilly, 2005), (Spradley, 1980)

In order to show this, the research was conducted in two parts. Firstly, ethnographic based research was conducted where elderly were observed and questioned in a grocery shopping environment.

The second part of the research was quantitative. A survey was handed out to a range of elderly people in order to get a visual representation, in the form of graphs, of what they considered important in packaging as well as what they had difficulties with.

5.8. Credibility and Quality of Research Findings

5.8.1. Ethnographic (Accompanied shopping trip)

For the accompanied shopping trip, 10 participants were recruited in a variety of ways, including word of mouth from previous participants, though most answered an ad that was placed in Age Concerns monthly newsletter.

5.8.1.1. Reliability, Validity and Quality

In order to ensure that the information gained was reliable and valid, a set of guidelines and questions were set up in order to ensure consistency from one participant to the next.

As participants were mainly recruited through the Age Concern newsletter it could be assumed that any respondents would have encountered problems opening packaging as they responded to the advertisement which stated that the research was on elderly people's packaging problems.

On all occasions where participants were accompanied on a shopping trip a set of questions that were to be asked were given to the researcher in order to make sure that the information that was needed was obtained. This was necessary as it appeared that the participants often got distracted and discuss other topics as the trip progressed as they wanted to share information on their life, like their grandchildren, with the researcher. The questions also gave the researcher a way of bringing the conversation back on track when it veered too far off the topic of grocery packaging problems.

In order to make the participants feel as comfortable as possible during the research process they were taken to the supermarket where they would usually do their shopping. By knowing the layout of the store, what was available and where they could find the groceries they had purchased previously, they would feel more comfortable taking part. By making sure each participant was comfortable, not only with their surroundings but also with the researcher, the information given by them was more likely to be an accurate representation of what they thought.

Each participant was asked about several packaging types: glass jars; tin cans; freshness seals on milk bottles and more (which previous research and a literature review revealed were known to cause elderly people problems) and their opinions were noted down. Each participant's statements of opinion were recorded, either on paper straight into note form with quotes, or using a recording device.

Their notes and transcripts were then able to be compared with one another to see what themes and similarities, if any, were present throughout.

Participants were accompanied on a shopping trip which lasted for around 1-1 ½ hours depending on how much shopping they needed to do. All their reactions to the packaging were noted as well as where on the shelf they tended to get their products from.

5.8.2. Survey

The survey was adapted from one previously undertaken by (Duizer, Robertson, & Han, 2009) through Massey University, and although, it gave great insight into potential problems that elderly people faced with packaging, it was thought that the area could be further developed and also compared to ethnographic research methods.

Twenty five individuals took part in the survey and they came from a wide range of backgrounds. Both male and female participants, over a wide range of ages, were given the same survey to fill out. Some had already taken part in the ethnographic research part of this study and knew what the survey was about, but most of them were new to the study and were given a cover letter which introduced the researcher as well as the topic and how it affected them.

5.8.2.1. Reliability, Validity and Quality

Participants were selected mainly according to their age as well as partially according to their living situation. The age group that was used was 65+ and both male and female participants were needed. It was preferred that the participants lived on their own or at least in a situation where the amount of outside help with daily tasks was minimal. This allowed for people in the situation where they lived in retirement villages but were still taking care of themselves. And it also allowed for a couple where they were self-sufficient and perhaps only reliant on one another.

The questionnaire was rewritten in a more user friendly way that was easier to understand, compared to the previously used survey which contained sections that were more difficult to understand. Most of the participants had a researcher present so that they could ask for help if they did not understand a question fully, although the participants that were gained by leaving questionnaires at a local hearing centre could not do this. It is thought that the participants who participated from the hearing centre took part as they wanted their opinions to be heard.

As the whole survey was very much non-pressurised and participants were obtained by identifying people who wanted to voice their opinions, it is thought that the information obtained is both reliable and sound. All participants were assured, more than once, that all information they gave in the survey would not be linked back to them and there would be no way of telling whose opinions were whose.

6. Chapter 6 - Presentation of Results

6.1. Introduction

The more traditional/original ethnographic research model which uses only observation and not communication with the participant would not be sufficient to demonstrate all the packaging problems the elderly faced, as it would not give enough information on what the participants were feeling. It was thought that the best way to go about the research would be to follow participants around the supermarket while they made their grocery choices and ask them questions relating to their choices, or lack thereof, while the products were still fresh in their minds.

Participants were then spoken with again after the shopping trip, in their homes, about products in packaging that they already had in their pantries that they may have difficulties with. They were also asked how they felt and coped with certain packaging types that were thought to cause problems (but had not been thoroughly proved in previous research). Another question that was asked was whether or not participants had tools or gadgets to help them open difficult packaging.

A lot of the participants had either one or a range or health problems as a result of age that increased their difficulty in opening the packaging. These included problems with eyesight; arthritis in the hands; bone grafts; and decreasing muscle tone. The tools that were used ranged from objects as common as scissors to levered hooks to break the seal of a jar and open ring pull tins, and clamps to open jars, among others.

A look in the pantry showed that participants mainly bought glass jars, tin cans, and other dry staples. Most of the packaging was in jars or cans, (see figures 19, 20 and 21, page 47).

6.2. Previous Survey Results

The previously conducted survey and the one on which this research was based on was performed by Duizer, Robertson, & Han (2009) from Massey University, Albany, Auckland, New Zealand. They have also conducted their research in two parts. The first being a survey which questioned participants about their packaging choices, problems, and likes and dislikes, which was then followed by a focus group which discussed what alterations could be made to packaging in order to make it less problematic for elderly people to open.

The survey involved 99 people and 13 individuals were included in a focus group afterwards. It was found that price, safety, size of packaging, and recyclability were the most important attributes to the participants. Problems that were determined to be the most frequently occurring were lids that were too tight; the printing on the label being too small; and spillage during opening. “50% or more of the respondents indicated that peel-able induction seals, lug closures and continuous thread closures were problems that occurred ‘very often’ or ‘frequently’” (Duizer, Robertson, & Han, 2009) page number?. Sixty-one per cent of participants had asked for help opening packaging.

It was concluded that although some of the closures were causing problems during opening it did not stop the participant from buying the products. It was also found that "price" appeared to be the driving factor when people decide what to buy. The study showed that glass bottles and jars were most favoured by the participants. It also showed that 20% of the participants did not like either aluminium cans or plastic bottles (for whatever reason).

The result showed that only a minority of people indicated that they would stop buying a product because of packaging difficulties (19%), indicating that packaging issues do not prevent participants from purchasing food products.

6.3. Results of Ethnographic Research

6.3.1. Adapted Ethnographic Research Model

Although Ethnographic research is defined by some as a purely observational approach to research where participants are observed but no contact is made with them (Spradley, 1980), and they may not even know they are being observed, this is the more extreme end of ethnographic research.

"Ethnographic researchers learn through systematic observation in the field by interviewing and carefully recording what they see and hear, as well as how things are done, while learning the meanings people attribute to what they make and do" (Schensul & Lecompte, 1998, p. 2).

The adapted ethnographic research method has brought to light many aspects that, although previously thought to cause problems for the elderly, had not been thought as extreme as they were in reality.

One of the main problems with opening packaging for the elderly is just that, the opening part. By following the elderly on the shopping trip and then talking to them in their home environment it has been found that they do need help opening a wide range of products they buy for their everyday life. All but one of the participants said they generally were not put off buying a product even if it was harder to open, they would just get someone to help them open the product. One of the participants said that she didn't buy a certain type of juice as she couldn't open it but as it was just a 'want' product and not a necessity, nor a substitute for another juice, it did not bother her.

All of the ten participants that were accompanied had used or were using some sort of aid to help them open certain packaging. These aids ranged from simple knives and scissors, which one would keep handy in a kitchen anyway, to purpose built packaging openers for ring pull cans and jars.

6.3.2. Execution

For the observational part of this research participants were accompanied on a standard shopping trip. What was considered standard varied from person to person depending on

how often they would go shopping and how much they bought. Each participant was asked when they were going on their next shopping trip and/or when it would suit for a researcher to follow them around a store.

Participants were asked to go about their general round of the supermarket and point out any packaging types they liked or disliked as they passed them. Some of the participants were recorded as wary of the recording device in the first few minutes (2-3) but they quickly forgot about it and did not take any notice of them.

It had been debated whether or not it was better to ask them questions while in the store or afterwards, but it was eventually decided that it would be best to ask them to narrate as the trip progressed as they would then have the packaging right in front of them, whereas if they were asked later they may easily forget items of interest.

Although traditional ethnographic research focuses more on observation without influencing the subjects, it is hard to determine why people make the decisions they do, and particularly in the case of elderly peoples', why they choose certain products while leaving others on the shelf without actively enquiring about this during the visit to the shopping centre.

Indeed, it would have been close to impossible to gain the relevant information by purely observing the participants as they went around the store as most decisions that are made occur very quickly and out of sight of the observer and in the participant's mind.

By following them during their shopping visit the researcher was able to get information from the participant as it occurred, as well as getting them to elaborate or comment on packaging that, according to the previous research and literature, was thought to have caused problems for other elderly people.

Participant Profile:

The age range for the ethnographic research was originally set to be 70-80 years old which is the age group most of the participants do fall into. There were three who fell outside this range due to health reasons. One of the participants, who was only 64, had immense problems with opening packaging. These health reasons include having osteoarthritis in both hands and, as a result, she has great problems with gripping objects and opening jars and bottles. One participant who was 68 years old had managed to break both of her arms and a leg simultaneously and has been left with impairments in both of her arms and her right shoulder. These lead to her not being able to grip things properly; not being able to lift heavy objects; as well as sometimes dropping objects unexpectedly as her muscles just contract and give way.

The other participant who fell outside of the main age group was 89 and although he had extremely week knees and problems with walking he is still relatively able bodied and quick witted. He is still able to open most things but he and his wife tend to have problems opening jars.

It can be said that half of the people had health problems that would impair their ability to open packaging in one way or another. These heath problems included:

- Arthritis
- Osteoarthritis
- Bone grafts in the wrist
- Shoulder replacements
- General weakness in muscles
- Impaired eyesight

Most of the people who participated in the study, whether or not they have health problems, said they had difficulty in opening packaging due to their inability to exert the amount of strength needed on a object.

6.3.3. Opening Aids

The image shown below (Figure 1) is of a pair of kitchen shears which are made to be tough and durable and able to cut and open a range of things. They have a set of teeth on the inside of either shank (arm) which 4 of the participants have mentioned using to open bottles with.

Figure 1 Kitchen Shears with serrated inner handle for opening bottles

The teeth grip on to the top and the length of the arms add leverage to the turn. The participants who demonstrated how they used them seemed to be able to use them although they did appear to have some difficulties: for some of them the teeth would slip as they were not strong enough to maintain the needed friction between the teeth and the top. It was also noted that while opening a bottle the shears were also open (as in Figure1) this meant that if the teeth slipped the blades could potentially harm the user.

The purpose built gadgets that the participants were using range in size and function. From the simplest design or a mat that is used to increase the grip on a lid to a lasso loop that has a range of sizes and tensions.

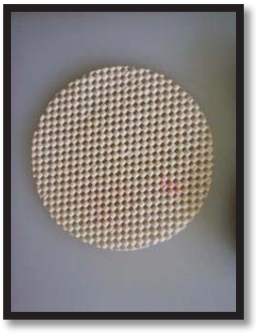

Figure 2 Non Slip Perforated Grip Mat

Figure 3 Non Slip Grip Mat

There are different grip mats available. Above are two examples:

Figure 2 shows a mat made out of high density foam. The bumpy surface of the mesh like material allows it to easily mould to any lid size and increases the friction between a person's hand and the jar so that more force is transferred to the lid: which allows it to be opened more easily. Figure 3, on the other hand, is made out of rubber. It has an uneven surface to increase friction but is not as mouldable as the foam mat. The Mats are often handed out as advertising media with a company's details printed on one side.

The users of both of these mats stated that they do help to minimise the problems of opening jars but often do not make much of a difference. All but one of the people accompanied said that they had great problems opening jars. Breaking the seal was the main problem and once the seal had been broken they could open and close the jars easily.

Figure 4 Top view of Jar Opener

Figure 5 Inside view of Jar Opener

The next step from the gripper mats is the rubber shaped cone shown in the images above (Figures 4 and 5). On the top side it has vertical ribs to give the user more grip when they try to open a jar as well as having an image indicating the way to turn in order to close the lid again. The inside has graduated rings from the edge all the way to the top so that any size jar can fit in and get as much surface contact as possible.

Although the device increases the amount of surface contact, and therefore the amount of friction that is applied to the lid, the user still needs to be physically able to exert enough strength to open the jar.

Two of the participants had devices which they used to break the seal on jars. Figure 6 below shows an old fashioned can opener which was used by one person to easily break the seals.

Figure 6 Jar Seal Breaker

Figure 7 Jar Seal Breaker in Use

The can opener has two ends, one pointed and one with a round end. Either end can be used to break the seal of a lid on a jar. The lip on the underside gets tucked under a lids edge, as in Figure 7, and then the can opener is used as a lever, which results in pressure on the lids edge and the seal breaking. The participant who used this was 68 and said that it “works nearly every time”.

Note: I have since found one in an op shop and use it myself on any jars that I cannot get open easily. It works every time.

Figure 8 Standard Can Opener (Kuan, 2009)

Another participant uses the end hook on the end of the handle of a standard can opener (Figure 8), which she says works in the same way as the advice mentioned above (Figure 6).

Another device that a lot of the participants of the ethnographic research had was an aid for opening ring pull tins. The basic hook like design comes in many variations. Two of the participants had the simple hook like device with a lever to aid with the pull off of ring pull tin lids.

Figure 9 Ring Pull Tin opening aid

Figure 10 Multipurpose packaging aid

Figure 10 shows a packaging aid which can be used for both ring pull tins, using the hook on the top right side, and bottle tops. The owner of the device did mention, however, that it was rather useless as a bottle opener and that the only use she found for it was opening ring pull tins. Below is a set of images which show how the green tool is used.

Figure 11 Sequence of participant opening Ring Pull Can

The images above came from a video that was taken of the participant opening the tin. And even with the aid of the device, the ring on the small can posed a problem to get off and some of the contents were spilt in the process. A comment was made by the participant that the smaller tins posed more of a problem than the larger ones because they were harder to get a grip of and still get enough leverage off to open the can. The same participant has a total of five different aids for opening packaging and still says that a lot of problems opening seals and lids on packaging still occur.

There are also more mechanical devices which have been designed to clamp on to jar lids and increase the amount of pressure and friction that, someone who may be lacking in hand strength, can transfer to the object.

Figure 12 Jar Opener

As you can see in the image on the previous page (Figure 12) the jar opener has a range of different levels, each of which are design to grip on a range of different sized jar tops. It has three main jar sizes as well as smaller teeth near the end to pinch on to tiny lids, as well as a hook on the top to open beer bottle tops. The image above is just one example of a range of jar openers that work in the same way.

The participant who has the jar opener shown in Figure 12 says that although it helps with the opening of certain jars, she finds that there are a lot of lids where the teeth either slip off or they are at the wrong height and just do not grip the lid at all. When she demonstrated how to use it, it looked awkward and not all that user friendly.

Figures 13 and 14 show close ups of the teeth and the different layers that they are set at.

Figure 13 Jar Opener (close up 1)

Figure 14 Jar Opener (close up 2)

Not all jar openers are made of metal, as shown by the simplistic mat like designs shown earlier. There are plenty of variations made out of rubber that have teeth on the inside to increase the friction between lids and the gadget. The rubber device (Figure 15) which looks like some sort of belt with teeth on the inside is made to fit on a large range of lids. It is flexible and durable and almost limitless in the size of lid it can open. The owner of it did say, however, that if the lids are on really tight then it does not help as there is no way that she can grip it hard enough to exert the amount of force that is needed. The rubber opener is flexible and can bend and stretch slightly to fit very large jars.

Figure 15 Jar Opener

One of the more ingenious devices for opening packaging that was encountered during the research is the one shown in Figure 16 below. It is made by Zyliss, who are known the world over for their innovative kitchen appliances and is truly a thought provoking device. There is a knob on the end which can be turned to increase and decrease the size of the metal band on the side of the image. By increasing the loop it can be fitted to a range of lid sizes and then once on the lid, the loop can be tightened to increase the friction by turning the knob in the opposite direction.

Figure 16 Extendable Jar Opener

The half moon shaped black rubber insert can be moved to the side so that the device fits onto larger lids more snugly, but when needed to open smaller bottles, it can be fitted back into place. Figure 17 shows the participant using the device on a peanut butter jar.

Figure 17 Jar Opener in use

The main problem that the Zyliss jar opener had was that it took a lot of turning to increase and decrease the size of the loop. This is probably because it has a thread inside with a small pitch which would allow a weaker person to increase the tension on the ring once it was on a lid more easily. The participant who owns the Zyliss device says it works quite well although it does tend to slip if not tightened enough or if there is not enough friction between the lid and the metal band. The handle itself is quite a good

length, although it needs to be so that there is enough space to house band to fit a large range of lid sizes as well as increasing the leverage.

The rubber half moon is ideal for gripping smaller lids like on soft drink bottles and wine bottles but the participant said that she preferred to use an old fashioned nut cracker that she had handy for those types of lids. The nutcracker (Figure 18 below) is probably one of the most basic available but the participant says it works on the bottle lids that otherwise she has problems with every time. While observing the participant who was using the nutcracker it very quickly became apparent that the participant still had problems exerting the amount of strength needed to open the lid. Some slipping of the nutcracker on the lid of the bottle occurred before the bottle was open.

Figure 18 Nut cracker used to open a bottle

One of the main points that needs to be made about all the various gadgets that are available to help people open packaging is that even though they may be able to aid by increasing the amount of friction that can be applied to a lid or bottle, they still require the user to have enough strength to utilise the device properly.

6.3.4. Problematic Packaging

The main packaging problems that people had, and that were commented on, were ones with jars, bottles, ring pull tins, child safe lids, and seals underneath milk bottle lids. All of the participants said they had problems with the above types of packaging except one elderly man who only had problems with the seals and ring pull tins.

The main types of packaging that people who participated in the ethnographic research had problems with were:

- Glass Jars
- Screw top bottle lids (wine and soft drinks)
- Ring pull tin cans
- Freshness seals

The above mentioned packaging types do not cover all of the problems that the participants said they faced. They do, however, cover the most complained about problems and almost all of the participants had problems with all of the above packaging types.

There is no particular order of difficulty to the above listed packaging types.

Glass Jars:

Participants mentioned that they found them hard to grip properly. This depended both on the strength of the participant as well as the shape of the jar. All but one of the 10 participants said they had difficulty opening jars and would often use gripper mats and other jar opening tolls to reduce their problems. As well as this, 5 of the participants mentioned that they would often get a relative or neighbour to help with opening the product, or would get help from a shop assistant as a way of making sure they could open the package later. This did, however, mean that the contents were no longer sterile.

Screw top bottles:

The main problems mentioned with bottle lids were that they were hard to get a grip of for participants; especially if the person had dexterity problems (three of the participants had this as a result of arthritis). If dexterity was not the problem then it was the inability of a participant to exert the needed amount of force on the lid to turn it and break the seal or the friction between lid and bottle. Some of the participants try to overcome their opening problems with lids by using nut crackers (Figure 18) as well as the inside serrated edges in some kitchen shears (Figure 1).

Ring pull tin cans:

Accompanied shopping trips with participants as well as discussions afterwards clearly showed that the most problematic packaging type was the ring pull tin can. Every one of the participants had problems with this packaging type. From small problems where they had to lever the ring up slightly to be able to get a finger under for grip, to great difficulty where even with the aid of an opening device they still had problems Half of the people had some sort of packaging opening aid to help them with ring pull tins ranging from a simple knife or screw driver to lever up the ring to a hook like lever (Figure 9). Even with these aids it was observed that participants still had a problem with opening the ring pull tins. While one of the participants was observed during the opening of a small tinned tuna can she clearly had problems gripping the can while levering and then some of the contents spilled as she tried to get the right angle of leverage on the lid. Comments about how impossible ring pull tins were to open without aid were made by the majority of the participants.

Freshness seals:

This packaging problem refers to the freshness seals that can be found under the lid of many liquid or semi liquid food and beverage items in the supermarket. Freshness seals have widely taken over from the traditional lids where there were two parts, the lid and a serrated ring which, (a) - help to keep the lid on before the initial opening and, (b) - aided as a tamperproof seal. So that if the lid had previously been opened one could see this by the serrated joins being broken. Now all of these products: milk, salad dressings, juices and other condiments have foil freshness seals on them which also prevent any air contamination from occurring even if the lid is partially or fully opened.

All of the participants indicated that they had trouble removing these seals. These troubles occurred primarily due to an inability to get a grip on the tab rather than a lack of strength. Participants would not only use a range of different tools including scissors, knives and pliers, but also their teeth to try and pry the seals off. Although it was stated that some seals were easier to open than others, the overall difficulty of opening freshness seals was apparent.

Child Resistant Closures (CRCs):

All of the participants mentioned having problems with the opening of child proof lids, while observing some of the participants in their struggles it was noted that they lacked the ability to provide enough inward force to undo the child lock part as well as enough turning force to open the lid. As a result, many mentioned that they would have someone open the lid for them and then just never close it properly.

The use of an affinity diagram, which has been included in Appendix VI, gave a quick visual indication of where the participants' problems lay. The affinity diagram was used to group comments made about the packaging so that it could easily be determined what the main problems were. It quickly became apparent that glass jars, freshness seals on milk bottles, as well as ring pull tins and child proof lids were the most problematic packaging types.

6.3.5. Pantry Study

It was thought that one of the more insightful areas of interest, and one which would tell the researcher a lot about the types of products and the packaging the participants usually bought, would be the pantry. It was originally thought that the pantry, along with till receipts, would be an indicator as to what types of packaging were bought the most by each participant. The pantry was a great indicator of the types of products participants used in their day to day lives. The idea of looking at participants till receipts was quickly dismissed and it soon became apparent, when the first participants receipt was analysed, that there was no simple way of finding out what type of packaging each item bought was in. Indeed, the receipt gave no indication of what type of packaging houses each type of product and it would have been too difficult to take back (take back??) what type of packaging was used and therefore what types had been bought the most in past shopping trips.

Although most of the participants did not appear too willing to allow a pantry inspection, and those who appeared too uncomfortable with the idea were not asked, three of the participants allowed access to their cupboard and photos were taken.

As seen in the photos on the following page, the participants mainly shopped for long life products in cans as well as dry ingredients and readymade products. Although not all pantries were photographed, most of the participants allowed the researcher to look at what they contained, and it was generally the same; a lot of long shelf life products in cans as well as teas, pickles, staples like pasta and rice and pre-made sauces. From what the participants have shown, the choice of long life products is not because they cannot shop often, but more due to the fact that these are products they are used to and have grown up with. The participants obviously tend toward choosing products in cans and glass jars (although these are packaging types that they clearly had problems with).

Figure 19 Pantry selection of a participant

Figure 20 Pantry selections of a second participant

Figure 21 Pantry view of a third participant

6.3.6. Summary of Ethnographic Research Results

Again, for privacy reasons, no names have been associated with any of the research other than that which the researcher has contact with directly. For this reason participant summaries (given in full in the Appendix VII) will be given a letter to differentiate them but nothing more which may relate back to them.

The length of the shopping trip as well as the information given by the participants varied greatly. Some did not talk much, but what was said was to the point while others had a lot of packaging problems to talk about.

Most of the ethnographic research that was conducted was pointing in the same direction. Although it is unfortunate that so many people are encountering problems with product packaging, it is good to establish what these problems are so that they may be overcome by design changes. Most of the participants are continuing to buy products that they want even though packaging may cause considerable difficulty when opening, and the types of packaging they are having the most problems with are the more traditional packaging styles like glass jars, bottles and tins (although most participants

have managed to find decent can openers which make opening these easier, they all have problems with the more recent “Ring pull tins”, which they just cannot get their fingers under to pull on, or if they can, then they can not apply the right amount of force at the right angle to open them).

Nearly all of the participants commented on the difficulty of opening child proof lids and many joked that they were “elderly proof” as well as child proof. Those that had problems combated them by having someone open the lid for them and then they did not close it again.

All of the participants had tools of some form or another to help them open difficult packaging with the most popular aids being grip mats for jars; jar lid clamp devices and ring pull levers. Participants said that most of these were useful but very purpose-built. One participant had 5 tools of her own, not including scissors, knives and pliers that she used to aid her as well.

Three of the participants had an electric “One Touch Can Opener” and said that they worked amazingly on all the traditional cans that they needed to open. They also said that they had problems with the more traditional can openers as two of them suffered from arthritis, and all just could not exert enough strength on the can.

While observing some of the participants who were wanting to demonstrate how they opened certain packaging types, it was interesting to see that even though they appeared to be having considerable difficulty opening ring pull tins even with a tool, it was not considered as bad a packaging type if they could get into it somehow.

Observations were made that the participants looked genuinely frustrated while trying to explain the difficulties they had with the packaging, yet it appeared that most of them did not want to appear weak in the way they explained their problems. It is thought that the reason for this could be that they do not want to appear weak and incapable of doing things they used to find easy to do.

6.4. Results of Survey

The survey's main aim was to back up the information which was gathered in the ethnographic research as well as highlight the benefits of performing such research.

The areas covered in the survey included:

- The frequency of a participants shopping trips
- Whether or not they chose products because of the packaging they were in
- How important they rated different packaging attributes (size, shape, etc.)
- Their likes and dislikes of packaging types (bottles, jars, etc)
- How often they encountered problems opening specific packaging types
- Whether or not they encountered problems with re-sealing packaging
- If they encountered any other packaging related problems (spillages, leaking, lid too tight to take off, and label printing too small to read)

The participant group was made up of 8 males and 16 females and one person who did not specify their gender. Their age groups were made up of the following: 5 people under 70; 9 people aged 70-79; and 11 people aged over 80.

It was thought that the range of the participant's ages as well as the ratio of males to females was a representative sample to show what the population of elderly people thought about packaging problems. The fact that there are more females than males in the sample is good as there are more females than males in the elderly population (Statistics New Zealand, 2009a).

The first question that participants were asked was how often they went shopping. As can be seen below (Table 8), most of the participants went once a week, a close second however is the number of people who go 2-3 times a week.

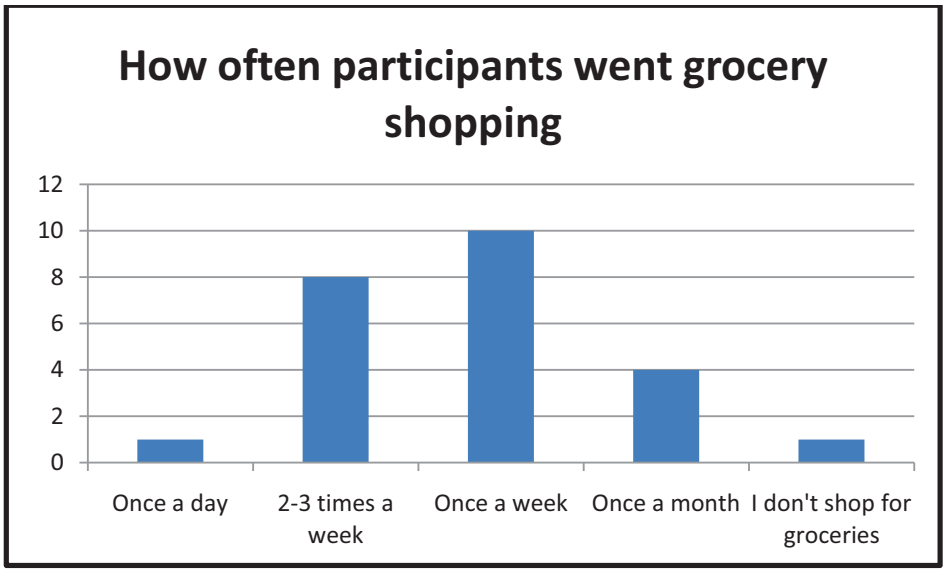

Table 8 How often survey participants go grocery shopping

The shopping habits of the elderly, as shown by the participants, tend to indicate that people aged 65 and over shop more frequently. This could be due to a number of things including; lack of strength to lift bags containing a lot of groceries; the need to shop for smaller portions as they do not eat as much and therefore buy sizes that will not perish before they are used up; or maybe it is because they have the time to go shopping more often. The number of times elderly people shop could also have to do with their dependence on others; if they rely on someone to take them to the shops then they may not go shopping as often as those who can drive themselves.

The frequency of elderly people's shopping trips may influence the amount they buy at any one time which may in turn influence the types of packaging they choose as some types weigh more than others.

One of the most interesting outcomes of the survey was in regards to participants purchasing decisions due to packaging. Each participant was asked how often their purchasing decision was influenced by the packaging type. The following graph (Table 9) shows how participants were influenced.

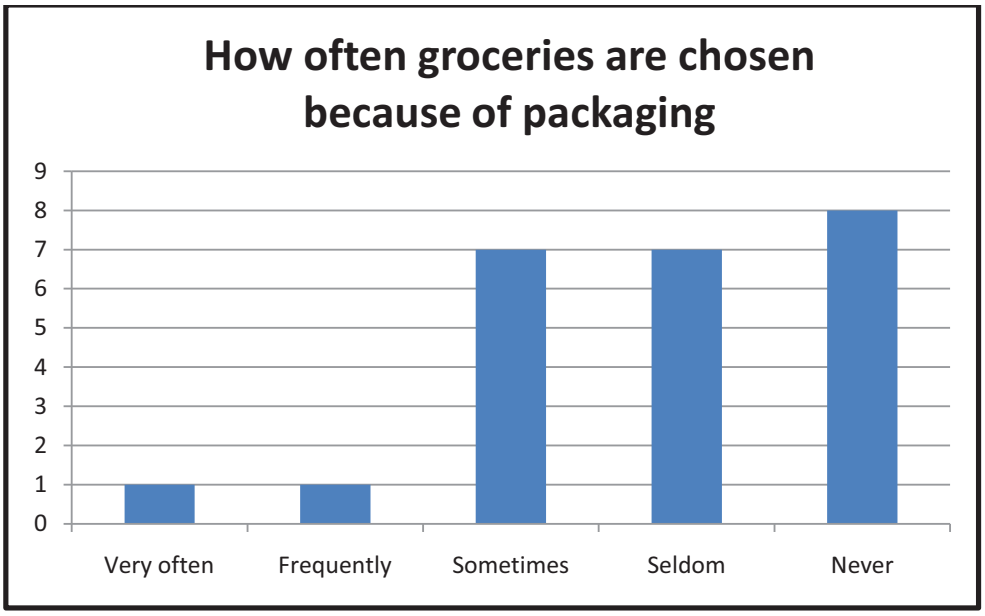

Table 9 Choosing groceries due to packaging

The graph above clearly shows that participants are not inclined to choose groceries because of to their packaging. This is interesting given that there are definite packaging types that the elderly are having problems with, but they are still choosing to buy them. It is thought that the reason the elderly are still buying packaging that they have problems with is because they are after what is inside. The research has shown that they continue to buy packages that are hard to open and just deal with the problems as they arise. Using tools and methods to get in or asking for help, rather than foregoing a product, seems to be the trend.

The third question in the survey looked at the product attributes and how important participants thought they were to them. Each person was asked to rate each attribute on a scale of 1-5 where the following corresponding values applied:

- 1 – Not important at all
- 2 – Not important
- 3 – Didn't matter
- 4 – Somewhat important
- 5 – Very important

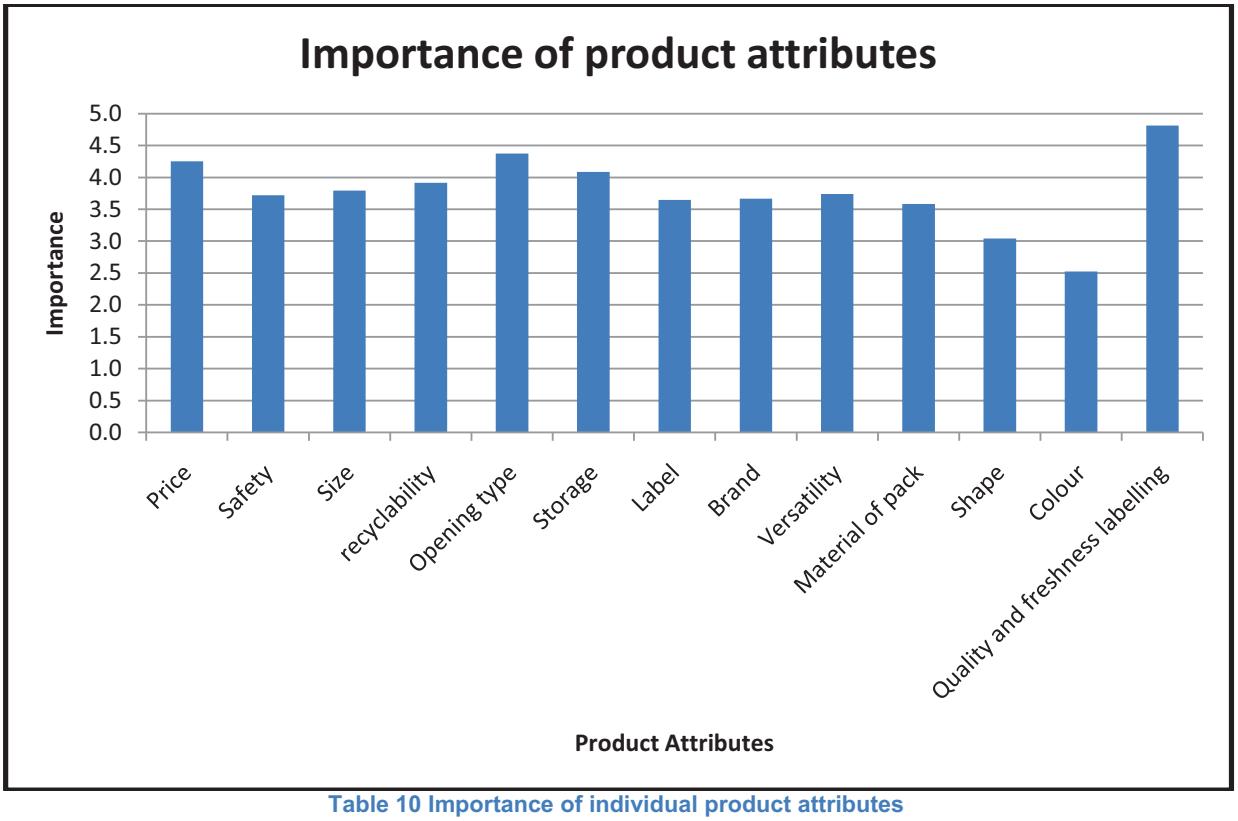

Table 10 Importance of individual product attributes

Not surprisingly, 'price' is one of the highest ranked product attributes. It has to be understood that although everyone is living in the midst of a recession at the moment, the elderly in particular will be looking at their spending habits and making sure that they are not spending more than they need to. With most elderly people living off either their savings or the pension, and unless their savings were considerable or they had substantial investments elsewhere, a lot would need to be very frugal.

It is interesting to note that in the table above, the 'opening type' is rated very highly, sitting at just under 4.5, which makes it an important attribute. But when asked whether or not they choose products according to packaging type, most participants said 'no'. This is indicating that although they find the opening type important, for whatever reason, they are still not avoiding certain opening types.

The highest ranked attribute, 'quality freshness labelling', came as more of a surprise. Although it was thought that it would be considered as an important attribute, it was not to be as important as 'price' and 'opening type'. All but 5 of the participants rated 'Quality and freshness labelling' as Very important (a rating of 5), of those that did not, 4 rated it as a 4 and one rated it with 4.5. This demonstrates that elderly people think that it is really important to be able to tell how long something will keep and when it is best to eat it.

Colour and shape of pack were both rated the lowest, sitting between "not important" and "doesn't matter". This research would hope that the colour and shape of a pack would be the least influential attributes of a product, at least on a conscious level of thinking; the fact that they most probably do influence buying decisions on a subconscious level is probably best ignored for now as it will just complicate matters further Most of the other attributes are not relevant in the context of this particular research project; they simply add something to which the openability of a package/product can be compared to.

The other attributes all rated somewhere between neutral "doesn't matter" and "somewhat important" on the graph on the previous page. Table 9 shows the average ratings of all the attributes.

6.4.1. Packaging Likes and Dislikes

Question 4 looked at whether or not the elderly participants liked certain packaging types. The question was aimed at finding out what the participants thought of the packaging and they were asked to deliberately ignore whatever contents may be in the package as the question was aimed at only packaging.

Participants were asked to rate common food packaging types on a scale of 1 to 5. The following scale was used:

- 1 – Dislike very much
- 2 – Dislike
- 3 – Neither like nor dislike
- 4 – Like
- 5 – Like very much

The table below shows that the most liked packaging type is "Glass bottles and jars" which is not really surprising as the elderly participants are of a generation that grew up with glass jars and bottles. Tin cans and cardboard boxes are also types of packaging that rate highly. They are ones that the participants are accustomed to and therefore are probably seen in a favourable light.

It is a bit surprising to see that zip lock bags rate highly as well as it was thought that, due to a high occurrence of arthritis and other degenerative conditions, the elderly would have problems opening and closing them. In fact, a lot of the people who were spoken with in the ethnographic research mentioned that they had problems with this packaging

type; they also mentioned that they found them practical to keep things handy and fresh. While zip-lock bags prove more difficult than other packing to open, it is probably a case of handiness and freshness outweighing ease of access for these participants. The elderly appear to buy groceries regardless, for the most part, of what type of packaging it comes in.

As can be seen in Table 10 below, the least liked packaging types include Cellophane wrapped items, Tetra Paks, and Aluminium drinking cans. The first two of these packaging types had an average rating of less than 3. A rating of 3 would have been a neutral rating. As such, it is reasonably safe to conclude that these are among the less preferable packaging types. Aluminium cans did not score significantly higher, although they manage to get an average of three which is neutral.

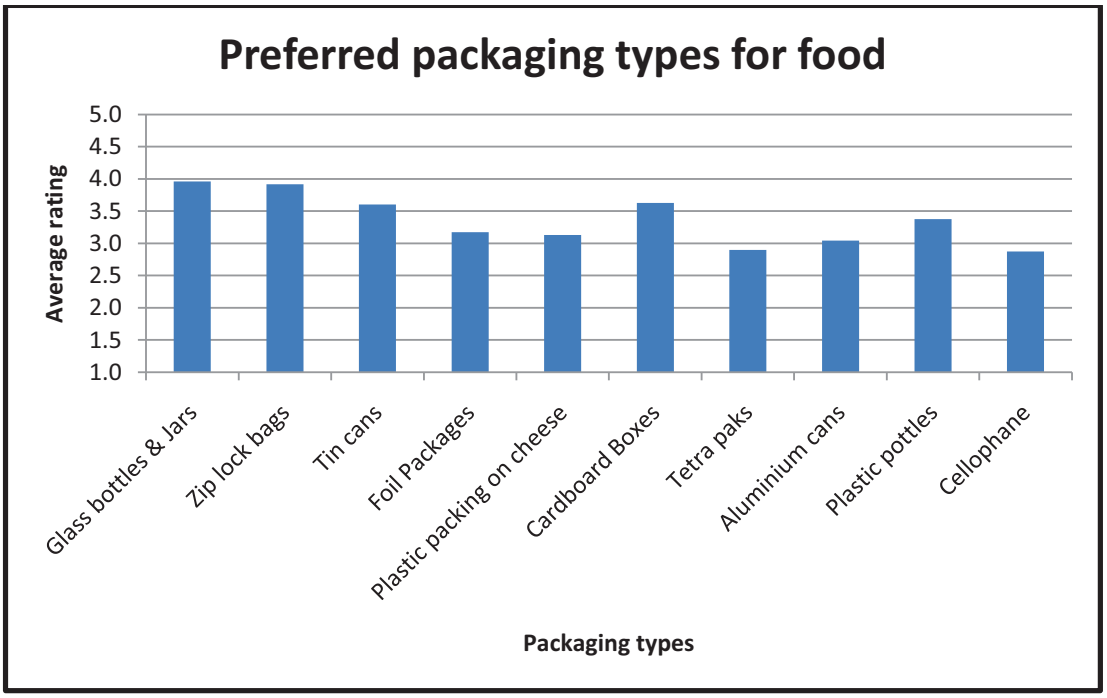

Table 11 Preferred packaging types for groceries

A lot of what the elderly people like is most likely due to familiarity rather than easy openability. This can be seen in the next section which looks at how often elderly participants encounter problems with opening certain packaging types.

Participants were asked to rate common opening types on a scale of 1 to 5. The following scale was used:

- 1 – Never
- 2 – Seldom
- 3 – Sometimes
- 4 – Frequently
- 5 – Very often

The average results were tabulated and are shown on the graph below.
Participants were asked to rate how often they encountered problems with the following grocery packaging opening types:

- Aluminium drink cans
- Ring pull tins
- Resealable bags
- Twist caps
- Screw off lids (Jars)
- Foil packaging
- Sipper tops
- Freshness seals
- Ring pull tin cans
- Traditional tin cans

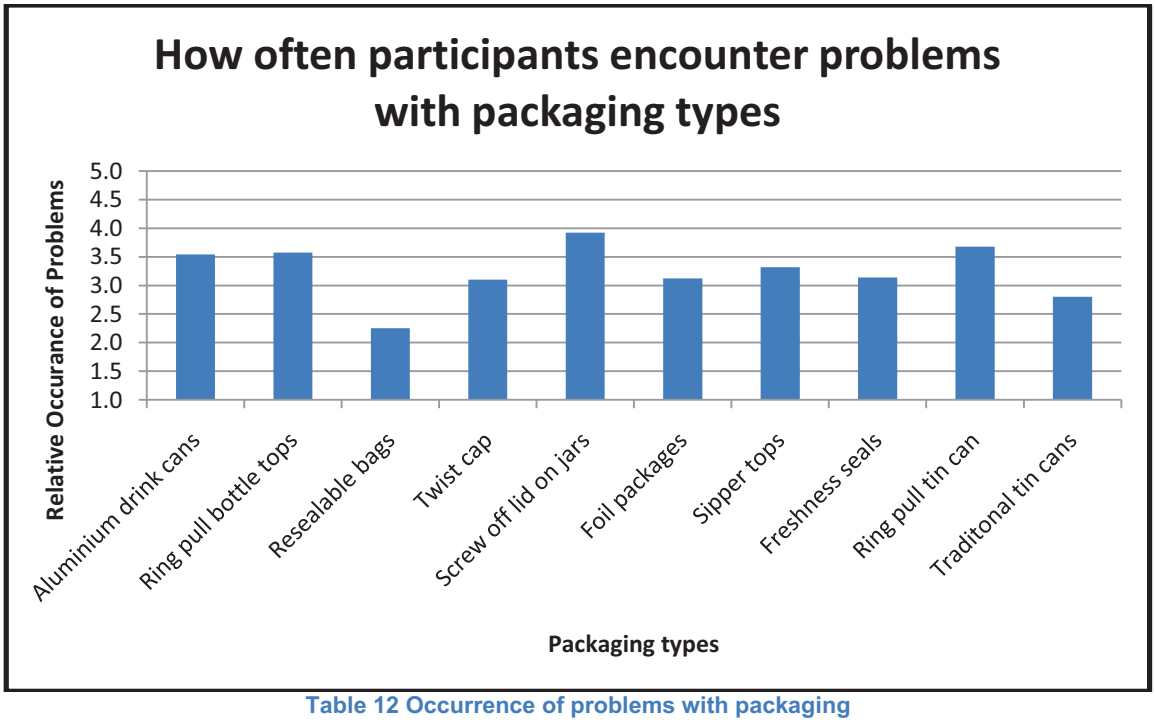

Table 12 Occurrence of problems with packaging

The packaging opening type that has the most occurrences of opening problems with the elderly participants of the survey is screw off lids on jars. They are rated at just under 4 (3.9) which coincide with problems being incurred frequently. The second most problematic opening type are ring pull tin cans which are rated at 3.7 which is on average closer to Frequently (4) than Sometimes (3). The other two packaging types which sit in between the two categories are “Aluminium drink cans” and “Ring pull bottle tops” (3.5 and 3.6 respectively).

Problems were sometimes encountered with: Twist bottle tops; Foil packages (chips and biscuits); Sipper tops; and Freshness seals. Though, by contrast, the ethnographic data clearly showed that the elderly often encountered problems with “Freshness seals” in particular.

Although it was thought that resealable bags would be a cause for concern among the elderly, it appeared that they were not a problem. This comes as a surprise as it was

thought that high occurrences of dexterity problems, including arthritis, would impede the opening and closing of resealable bags.

On an aside, participants were also asked whether or not they had any difficulties in closing or resealing any of the packaging types. Most of the answers indicated that resealing problems were “seldom” occurring, although there were certain individuals that had more problems than others.

- 3 people stated that they “very often” had difficulties closing the tops on sipper bottles, another 4 “sometimes” had problems
- 1 person indicated that they “very often” had problems resealing resealable bags, while 3 people “frequently” had problems
- 2 participants “frequently” had problems resealing glass jars, 3 people “sometimes” had problems resealing glass jars

Note: a lot of the time the people who had a problem resealing one type of opening also had problems with others. The above mentioned incidents are not all of individual people but individual incidences of problems for each opening type. As mentioned above, the overall indication of the data was that there were not many problems with resealing packaging.

The last question referred to other problems with packaging and once again asked participants how often they encountered certain problems with packaging.

The last group of question were as follows:

- Spillage when opening the packaging
- Leakage during storage
- Lid is too tight to take off
- Label printing is too small to read properly
- Too heavy to carry
- Awkward to handle (difficult to pour or open, or pass along)
- Have you ever asked for help when opening a food package?

Participants were asked to rate each on the following scale

- Never
- Seldom
- Sometimes
- Frequently
- Very often

As can be seen in Table 13 below, “Spillage”, “Leakage” and “Too heavy” are the three least occurring “other problems” relating to packaging. According to the participants of the survey, the problems they encountered the most were that the writing on the label was too small to read and also the lids were too tight to open - although that links back to their difficulty with opening jars which was discussed earlier.

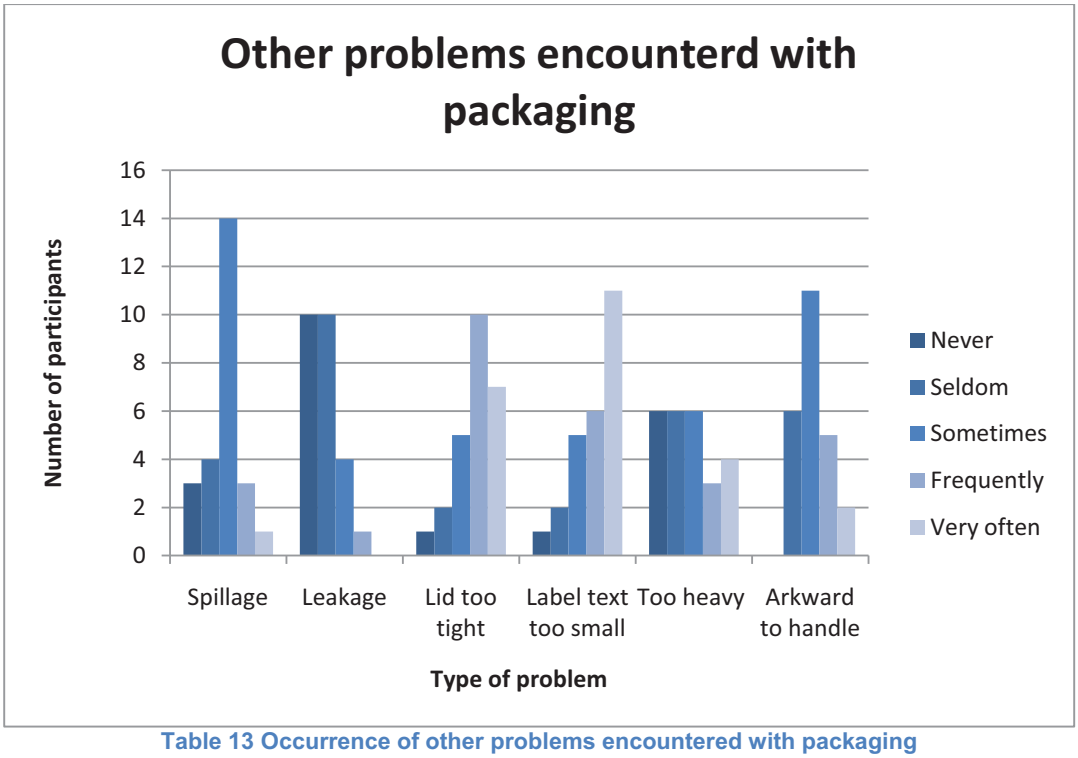

Table 13 Occurrence of other problems encountered with packaging

Participants were also encouraged to make further comments on any of the questions at the end of each question. Two of the participants thought that country of origin was important enough for them to be mentioned.

Several of the survey participants felt the need to mention that child resistant lids cause them extreme opening difficulties. Many of them mentioned that they were not only child resistant but “elderly resistant” as well. The products mentioned were cleaning products like “Janola” bleach. Unfortunately the previous research undertaken by Duizer, Robertson, & Han (2009) did not look at the problems of child resistant closures, and although a similar research project (Ounsuvan, 2010), (which was undertaken in Thailand) acknowledged that elderly faced problems with these closurers, they were not compared or researched.

7. Chapter 7- Analysis and Discussion

7.1. Introduction

As Freudenthal (1999) mentions, there are a large range of both physical and mental capabilities where the elderly have difficulties. These play a large role in the way they are able to handle and interact with packaging.

The advantages of performing ethnographic research in this sort of a situation - one in which a researcher wants to find out a rich depth of information - are considerable. The ethnographic research provided a much richer and more complete source of information than the survey alone would have provided. This has both been covered by the literature (Cooper & Edgett, 2008; Kleef, Trijp, & Luning, 2005; O'Reilly, 2005; Rosenthal & Capper, 2006) as well as the research undertaken for this thesis.

It is this researcher's opinion, that, when dealing with people and trying to determine what it is that the consumer wants from a product, ethnographic research (though time consuming), produces much more valuable data through which the Product Developer can adapt products to suit the consumer.

7.2. Ethnographic Research in Theory

. A lot of the theory on ethnographic research describes the field as a mainly observation based area, and describes it as a way of taking an in-depth look at a group of people in society. But that insight alone does not give the researcher enough detail on how to develop products. In order to do this, information on what the participant thinks, as well as does, needs to be gained.

The traditionalists in ethnographic research tend state that the only way to obtain any significant data in the field is to fully immerse oneself in both the physical and social environment of the subject. The papers by Kelly & Gibbons (2008), and LeCompte & Schensul (1998) as well as Spradley (1980) listedsome of the more traditional views of ethnographic studies and mentioned that in the early to mid 20th century it was widely believed that the only way to gain any valuable knowledge was to be as fully immersed in the group being studied as possible.

7.3. The Reality

The interesting thing is that ethnographic research methods, although not used often in product development, have been adapted for use in industry to help marketers, as well as designers, and research firms. The most important aspect of ethnography is probably the idea of learning about people and the way they live through observation as LeCompte and Schensul (1998) have described it.

There has to be a middle ground between the purely observational/full immersion type ethnographic study method and that of a question answer scheme that is so readily followed by the analysts of today's modern society. Using an observation based approach like traditional ethnographic research limits a researcher to that which can be

observed, rather than discerning what the person thinks or feels. There is no insight into their mind.

Cooper and Edgett (2008) have rated ethnographic research as the number one method amongst users for effectiveness. It is, however, one of the lesser used methods. One theory suggests the the reason for this is the amount of time that it takes to perform this type of research. The time it took to conduct the ethnographic research when compared to the survey research showed a great difference on a time-per-person scale. The ethnographic research took considerably longer to conduct although the information was richer.

7.4. Results vs. Hypotheses

H1 - Ethnographic research methods are better at obtaining data useful in the design aspect of product development than traditional quantitative survey methods.

There is no clear cut answer here. Whether or not ethnographic research methods are better than surveying methods depends purely on what type of information the researcher wants to find out, and in which context they are performing the research.

Both ethnographic research and more traditional surveying methods are effective in their own right, but it is thought that in order to truly get a feel for what is happening in reality, a combination of both needs to be used.

If, like in this research example, the aim is to try and determine where a problem lays, then the research has shown that it is best to not only observe what the participant is doing but also to ask them where the problems lay. In order to be able to get viable data, however, the researcher needs to build a rapport with the participant and generally the participant needs to have some vested interest in the project.

H2 - Elderly people are having more problems with packaging than previous research in this field has indicated.

It was originally thought that the moderate problems that were found to be problematic may be occurring more often that we think. It has been found, both in the ethnographic research and the survey conducted, that the elderly who live independently have extensive problems with opening certain packaging types, including ‘Glass Jars and Bottles’; ‘Ring Pull Tin Cans’; ‘Child Proof Lids’, and ‘Freshness Seals’.

H3 - Some elderly people may forgo a preferred product in favour of one they like less because of difficulties in opening the more favoured products. .

Although there are indicators in both the survey and the ethnographic research that there are a few elderly people who will forgo certain packaging that they find problematic, in most cases this is not so. The ethnographic research shows that, except for one instance where the participant wanted a certain juice type but did not buy it because she could not open the packaging, the elderly will, in general, buy what they want regardless of what it

is packed in and deal with the opening of it later. The previous study by Duizer, Robertson, & Han (2009) supports these findings in that their research showed that elderly people were buying packaging types independent of whether or not they had problems with them. Furthermore, the literature on the elderly and their lack of strength when opening glass jars (Lewis, Meardi, Yoxall, & Langley, 2007; Torrens & Huxley, 2001), combined with the previous research which shows that glass jars are one of the most popular packaging types for elderly, suggests that these are bought regardless of the problems they have opening them, and many elderly are simply combating the problems by buying gadgets to help them with opening.

7.5. Previous Research Indicators

The research that this study was initially based on, by Duizer, Robertson, and Han (2009), had already indicated that there were packaging types where problems had been acknowledged. This study aimed at looking further into these problems.

Duizer and associates' (2009) research found that problems occurred frequently. It also found that, of the 99 participants surveyed, 19% would stop buying a product due to packaging difficulties. The research highlighted referred to the 19% as if it was a small percentage, where as 19% (almost a fifth) of participants is a relatively large amount, especially when considering what is being measured. It indicates that "one fifth" of people aged 60+ would be likely to stop buying a product due to packaging problems. For this reason it was thought that further research needed to be undertaken in this field.

The research undertaken that is featured in this report found that although there were indicators that some elderly peoples' purchasing decisions may be affected by problematic packaging, in general participants still bought what they wanted because of the contents and not because of its packaging. It was also found that, like previous research had indicated, people rated recyclability high on their scale of importance. When observing what was in pantries and what was bought in the supermarkets, it was reported by the researchers that no one looked at the bottom of the packages they chose to see whether it was recyclable or not. (This could well have been because the participants had purchased the item previously and were already familiar with the product's recyclability. Unfortunately this cannot be ascertained because the participant was not questioned about this at the time).

7.6. Field Trial Adaptations and Values

The idea was initially to have a purely traditional ethnographic research method where the participants were observed without any direct interaction between themselves and the researcher. This would have meant that the researcher would have followed the participant around a supermarket and observed the types of product they picked up, looked at, placed back on the shelf, and the ones they bought. One of the problems that quickly became apparent with this potential method of research was that, as mentioned above, the only information that the research could obtain would be what was visually

available to them. Anything that the participant thought or felt would remain elusive to the observer, therefore it was decided that the research method would be adapted to suit.

It was decided that each participant would be accompanied around the supermarket by the researcher and as they progressed they would discuss certain decisions made and talk about how the participant felt about certain packaging types as well as the problems they encountered. This was considered a short cut to an alternative where the researcher would watch the participant open a set of packaging types commonly known (by previous research as well as literature) to be difficult.

7.7. Outcomes from the Field

It became clear very quickly that although the participants were having problems opening a range of packaging types (which they readily acknowledged), they were continuing to buy these products. Indeed, it was observed on numerous occasions that as the shopping trip progressed and the participant mentioned packaging types that they had problems opening, they would still place the product in their shopping trolley. Either that or they would state their problem and say that they usually bought the product but were not currently in need of it.

A lot of the problems that the ethnographic research participants had with the packaging appeared to be due to the strange shape or size of the packaging, and therefore awkward to handle. This was seen when the participants tried to get a hold of the product to show the researcher how they would open it. All of the participants were eager to show the products they had difficulties with and also indicated the ones which they would use tools or gadgets on to open. Although the participants had gadgets they made use of to aid the opening of a difficult packaging type, they still had a lot of problems. Often it was the simple problem of not being able to get a proper grip on the product, while for others it was a lack of strength that caused the main issues. This was often due to swollen or misshapen fingers from arthritis and osteoarthritis and problems with strength as the participant had received bone grafts in her arms and had lost some function in the arm.

It appeared that the main packaging problems were repetitive and not just due to a lack of strength as a third of the participants still appeared to have a lot of their strength, and as well as not mentioning strength as an issue for their problems when they showed the opening of packaging, their main problems appeared to be getting a grip on the product to open it.

These problems were not one-off occurrences. All of the participants said that they often had problems opening the packaging types. These problems occurred most readily with: ring pull tins; freshness seals –the ones on the outside of jar lids like those found on spices and mayonnaise, foil type seals on cottage cheese, hummus and peanut butter, as well as the foil seals that are now under the lids of most brands of milk; standard jar lids – which often require both a lot of strength as well as dexterity; child resistant lids; and perforated cardboard seals – like on tea, kitchen wraps and laundry powder boxes. Their problems occur on a daily basis when opening packaging for the first time. When

the seal (vacuum) on a glass jar, for instance, has been broken, then the problem appears to be solved. Only a small selection of packages like childproof lids; soft drink bottles (mentioned by two participants); and Jimbo's cat food containers (which was mentioned by one participant) still gave them problems after the first opening.

Once opened, none of the ethnographic research participants mentioned any problems with the resealing of packaging. Over half of the participants did mention, however, that they had problems with reading the labels -mainly due to small print or the wrong colour combination (red on black or white on black).

It is interesting to note that all of the participants of the ethnographic research used tools of one form or another to open packaging and that these tools were not always able to help them. Some of the tools which had specifically been designed to aid with the opening of jars, bottles and ring pull tins were not able to grant the participant access each time. These tools still required the user to be able to exert enough strength on the tool to open the packaging and not all participants were able to do this.

7.8. Results from the Survey

This survey indicated, (as the ethnographic research demonstrated), that most participants did not buy a product because of its packaging type. It was originally thought that elderly people may forego certain products which were in more difficult to open packaging but it very quickly became apparent, through both the survey as well as the ethnographic research, that this was not the case. Most of the participants still bought packaging types and even like certain packaging types best even though they had difficulties in opening them.

Most of the participants in the survey indicated that they "seldom" or "never" chose groceries due to their packaging. The most important attribute when rated, on a scale of 1-5, where 5 is most important, was 'Quality and Freshness Labelling". The second most important was "Opening Type" and third most important was "Price". It is worth noting that the previous research conducted by (Duizer, Robertson, & Han, 2009) showed that 'Price' was the most important factor in the decision making process, while it only featured in third place in this research. This could be due to the nature of the sample, although this study has taken a range of overall middle class participants with a range of living standards.

When looking at the type of packaging the elderly prefer for their grocery items, it can be seen that the findings of this research is similar to previous research. As was the case in Duizer, Robertson and Hall's study (2009), the most favoured packaging type are the 'Glass Bottles and Jars. This is followed by ziplock bags, tin cans and card board boxes respectively. The least liked packaging types were aluminium cans, cellophane wrap, and tetra paks. As with the ethnographic research, the survey indicated that 'Glass Bottles and Jars' and tin cans were viewed very favourably with the elderly. When we look at how often people encountered problems with packaging, the most problematic

packaging is “Glass Bottles and Jars’. Another packaging type that was also very problematic was ring pull tin cans.

What is also interesting is that people had the least problems with ‘Resealable Bags’, which is one of the packaging types that was thought by the researcher to potentially be a source of great frustration for the elderly.

When it came to other packaging problems it was found that more participants experienced ‘Leakage’ than those that deemed the products ‘Too Heavy’. This was also found out by Duizer, Robertson and Han’s study (2009), and their results are very similar in this area. In both studies participants reported the lid being too tight as the primary *other* problem.

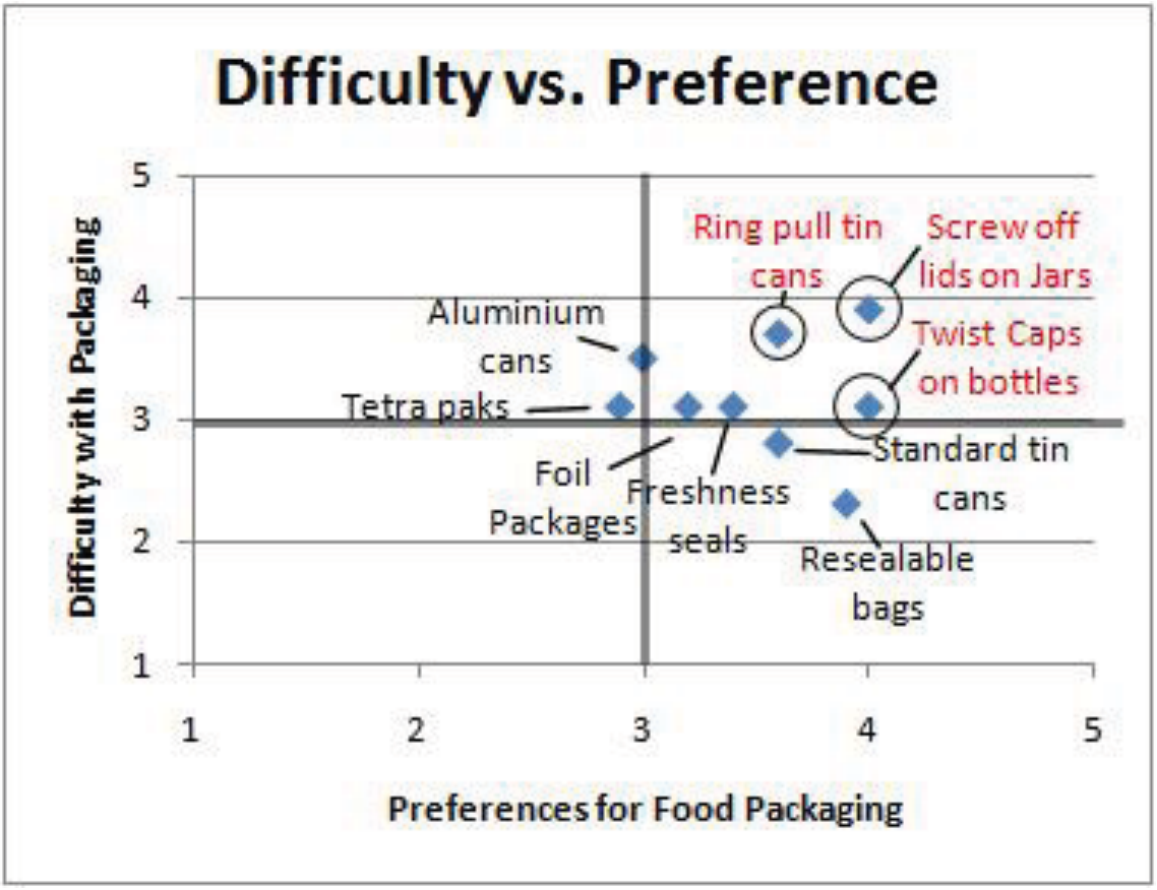

Table 14 Difficulty with packaging vs. Packaging preference (based on result of this research)

In the above table (based on the result from this research) it can be seen that when comparing packaging preference with its problems the packaging areas that need to be looked at are ring pull tin cans, screw off lids on jars and twist caps on bottles. These packaging types are not only the ones that are causing problems, but they are also still preferred by the elderly participants, which indicate that they are in the most need of modification.

7.9. Packaging Design Principles

When looking at the guideline in place in the Code of Practice for packaging in New Zealand it can quickly be seen that there is not enough emphasis on the consumer's interaction with the packaging. There is even less note taken of the need to get inside the package. The guidelines state briefly the need to "Meet Consumers Needs and Expectations" which looks at the need to both be tamper proof while at the same time easy to open (The Packaging Council of New Zealand (INC), 2010). There is not enough information in the guideline which ensures that packaging is openable by those who are using the product. It is thought that the use of "The Principals of Universal Design" would be one of the best ways to overcome the problems which elderly people have with packaging. As the Principles were developed so that a product can be designed so that it is universally useable, they could be easily applied to the packaging world. The principles developed by The Centre for Universal Design covers all that would be necessary to develop packaging which is elderly-user-friendly. It takes into account physical and mental capabilities, as well as the need to communicate a message, the individual's dominant hand (whether they are left- or right-handed) as well as the size of their hand. (Refer Appendix VIII for more) (Connell, et al., 1997).

7.10. Researcher's Thoughts

It is this researcher's thoughts that the most important part of this research is the human factor and its influence on the outcomes. That is what researching people, whether using quantitative or qualitative methods, is all about. It is the human factor and our differences that make the research so interesting. Given the same research method and the same people to study, two different researchers can have two very different experiences. It is therefore important to minimise these discrepancies as much as possible by having guidelines set out for the researcher to follow, as well as identifying research questions.

By conducting both ethnographic research and disseminating a survey, it was possible to determine that there is a large difference between the information that can be gained from ethnographic research and from a survey. During the ethnographic research the researcher was able to achieve a much more personal connection with the participants. Part of the ethnographic research aim was to get honest responses from the participants, which was mainly achievable by gaining their trust. It was found that, by spending time with each participant before hand as well as afterwards, the researcher was able to encourage friendliness between themselves and the participant, thus enabling them to talk about the problems that the participant faced in a relaxed and open manner.

The researcher is of the opinion that the information gathered during the ethnographic research process was of more value than that gained through the survey, and that the research experience was far more enjoyable than conducting the surveys. One thing that enabled this was most probably the fact that in order to find out anything of meaning from the participants the researcher had to ask questions and interact with the participant, as well as observe what they were doing, such as struggling to open a jar, not getting a finger under the ring on a ring pull tin then not having the strength to pull it back; not

being able to get a grip on a bottle to open it, etc. This encouraged both the researcher and the participant to relax as the cooperation of both parties was mutually beneficial to both. It was a very relaxed and open method of gaining information and proved very effective.

By talking to the participants and getting their views and opinions the researcher was able to look at the problems that elderly encountered with packaging from their point of view. By the end of the ethnographic research, the researcher had a better understanding of not only the problems that people aged 65 and over encounter with various forms of packaging, but also of their frustrations and how they felt about not being able to open certain packaging types. A lot of the problems that the participants had arose from a weakness in their hands, stemming from the loss of strength that comes with age. Others had difficulties due to health problems like, arthritis, osteoarthritis, shoulder replacements, bone grafts, and previously broken wrists which were not as strong as they used to be.

7.11. Further Research

To be proven effective, ethnographic research needs to be used more often in PD and its effectiveness evaluated. The potential for the use of ethnographic based research methods in PD is limitless. It makes sense to research people by observing their behaviours as well as asking them about what they are doing and the choices they are making. People are social creatures and therefore will be more inclined to interact with another person than answer a survey.

The key is to identify the best way to determine what the researcher wants answered by the information, while at the same time maintaining the validity and integrity of the study.

Further research needs to be carried out in both the use of ethnography in PD research and research into elderly packaging problems. PD can benefit considerably if ethnographic research is used more widely, but in order for that to occur, there has to be more evidence on its usefulness and how it can be implemented.

The design principles which have been developed for products need to be used more in the packaging world with emphasis on developing packaging for an ageing population and then there would be less packaging problems. By looking at the packaging types on the shelves which the elderly are having problems with, it can be seen that they were not developed with all of these principles in mind. Or if they have been, then only loosely. For instance, if we look at ring pull tins and the problems that the elderly have with them, we can see that they are not designed for “equitable use”, “flexibility in use”,or “low physical effort”. and if they were designed with these principles in mind then they have failed as this is one area where the elderly have problems. The same problems exist with glass jars and child- resistant closures.

8. Chapter 8 - Conclusion

This research has found that, although both ethnographic research and survey based research has its strengths and limitations, it has been decided that the quality of the information gained using ethnographic research, although not easily quantifiable, is higher. Ethnographic research has enabled the information gathered to reflect the people who provided it and be more specific to the needs of the elderly.

The participants in the ethnographic research were able to be more open about their needs as well as being encouraged to talk about the subject at hand, which allowed for more information to flow that did not show itself in the surveys.

One of the main points that needs to be made about all the various gadgets that are available to help people open packaging is that even though they may be able to aid by increasing the amount of friction that can be applied to a lid or bottle, they still require the user to have enough strength to implement the device properly. The manufacturers and designers of such products need to take these weaknesses into account and try to develop ways around these problems.

The four packaging types that proved to be the most difficult for elderly participants to open were screw top lids on jars, ring pull tin cans, ring pull bottle tops, and aluminium drink cans, in this order. As well as this it is important to note that there was great emphasis on the difficulty of child resistant packaging and the readability of text on labelling. What was interesting was that zip lock bags, which had originally been thought to be a cause of problems amongst the elderly, were in fact proven relatively unproblematic.

When looking at packaging problems that the elderly face it is also interesting to note that the pantry observation indicated most of the elderly people stocked up on traditional longer life tinned goods although at the same time they indicated that they had trouble opening these, especially ring pull tins. The survey indicated that 60% of the participants seldom or never chose their groceries according to the packaging.

The information in this report will be able to help lead product developers to finding a way to make packaging more user friendly for the older generations. The research has shown that ethnographic research is better at gaining a wider and more informative range of information when trying to find out what is needed to make packaging more user friendly for the elderly.

Ethnographic research needs to be used more widely in PD as it can provide information that is needed in more depth than a survey alone. Where a survey will give you answers to questions in the way that you ask them, the participant will answer them with their own interpretation (unless you spell out every aspect and leave no room for error), and the answers can then be interpreted incorrectly by the researcher. This type of research gains its strength by being an observation of the participant and their reaction to a situation, and when teamed with questions that can be asked while the participant is in

their natural environment where they feel comfortable this enables the researcher to gain information that may otherwise have been held back.

When undertaking product development the best outcome is gained by using both an adapted ethnographic research approach in combination with a survey. This gives the developer the quantitative data to back up the need for their designs as well as high quality information on the nature of the people they are developing the product for.

9. Chapter 9 – Recommendations

As a result of the information gained from this research, the following packaging problems have been found in need of improvement:

- Glass jar screw top lids – making them easier to open
- Ring pull tin cans – the loop needs to be easier to get a hold of
- Freshness seals – need larger grip areas
- Writing on labels – writing needs to be clearer and larger and definitive colour contrasts
- Child-resistant closures – need to be less restrictive to elderly people

While there is still further investigation needed into the use of ethnographic research in PD and the problems elderly people are faced with when opening packaging, it is recommended that the problems be looked at from a basic point of view. There is no need to overcomplicate things as the elderly prefer an honest simple approach.

Ethnographic research is effective and can be used widely in PD; it just needs to be implemented correctly. Although modified ethnographic research methods like the one used in this report take more time to complete than a survey, they are more useful to determine what elderly people (and potentially people more generally) actually want out of a product.

The use of ethnographic research in this study has shown that there are many problems that elderly people face when dealing with packaging. And although the packaging "Code of Practice" (The Packaging Council of New Zealand (INC), 2010) is of limited use in deciphering how products could be packaged to be less problematic for elderly people, "The Principles for Universal Design" (Connell, et al., 1997) could easily be adapted to become The Principles for Universal Packaging Design. In particular, the principle that states that products should be designed with a "Low Physical Effort" needed for them to function needs to be applied more readily to the packaging world.

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11. Appendices

Appendix I. Ethics Approval

Massey University

Te Kunenga ki Pürehuroa

NOTIFICATION OF LOW RISK RESEARCH/EVALUATION

INVOLVING HUMAN PARTICIPANTS

(All notifications are to be typed)

(Do not modify the content or formatting of this document in any way)

SECTION A:

1. **Project Title** Research on the links between packaging and shelf placement of groceries in supermarkets and purchases by elderly people

Projected start date for data collection February 2009 **Projected end date** April 2009

2. **Applicant Details** *(Select the appropriate box and complete details)*

ACADEMIC STAFF NOTIFICATION

Full Name of Staff Applicant/s

School/Department/Institute

Region *(mark one only)* **Albany** ☐ **Palmerston North** ☐ **Wellington** ☐

Telephone **Email Address**

STUDENT NOTIFICATION

Full Name of Student Applicant	Aliena Wieland				
Postal Address	24 Kate Sheppard Ave, Torbay 0630, Auckland				
Telephone	0274222149	**Email Address**	aliena.wieland@gmail.com		
Employer (if applicable)					
Full Name of Supervisor(s)	1. Dr. Aruna Shekar (Albany), 2. Mr Tom Robertson (PN)				
School/Department/Institute	Engineering and Technology				
Region *(mark one only)*	**Albany**	**1.**	**Palmerston North**		**Wellington**
Telephone	1.Ex. 9729 2. Ex. 4941	**Email Address**	a.shekar@massey.ac.nz, t.r.robertson@massey.ac.nz		

GENERAL STAFF NOTIFICATION

Full Name of Applicant					
Section					
Region *(mark one only)*	**Albany**		Palmerston North		**Wellington**
Telephone		**Email Address**			
Full Name of Line Manager					
Section					
Telephone		**Email Address**			

3. **Type of Project** *(mark one only)*

Staff Research/Evaluation:		**Student Research:**	**X**	**If other, please specify:**	
Academic Staff		**Qualification**			
General Staff		**Credits Value of Research**			

4. **Describe the process that has been used to discuss and analyse the ethical issues present in this project.**
(Please refer to the Low Risk Guidelines on the Massey University Human Ethics Committee website)

The ethical issues of the project have been discussed with my supervisor/academic staff member taking into account what the participants will be required to do. The screening questionnaire was filled out by both of us in order to determine which application should be made.

Participants will be well informed of the process which will be under taken for the research and written consent will be obtained. The privacy of each individual will be respected and confidentiality maintained. Personal information will not be linked to the data, and anonymity will be given to the participants. Steps will be taken to ensure that all questions and observations are age sensitive and does not discriminate the individual. At all time when the participants are taking part in the research they and the environment will be observed so that no harm may come to them.

5. **Summary of Project**

Please outline the following (in no more than 200 words):

1. **The purpose of the research, and**

2. **The methods you will use.**

(Note: ALL the information provided in the notification is potentially available if a request is made under the Official Information Act. In the event that a request is made, the University, in the first instance, would endeavour to satisfy that request by providing this summary. Please ensure that the language used is comprehensible to all)

The purpose of this research is to find out whether or not elderly people are influenced by certain criteria when they make purchasing decisions for groceries in a supermarket. It will try and establish whether individuals buy a less favourable product because it is in easier to open packaging, or do they avoid their favourites due to bad packaging. The research will also look to see if there is a link between the products' position on the Supermarket (SM) shelf and the participant's purchases.

This research will look at elderly people who are living at home, either alone or as a couple, and therefore do not have extra help available to them that those in a rest home or village would.

Participants will be informed of the details of the study and written consent will be obtained. They will be followed around during a shopping trip and their actions noted, and will be questioned about their purchasing decisions after they have made them so that they are not influenced by the observer.

Please submit this Low Risk Notification (<u>with the completed Screening Questionnaire</u>) to:

The Ethics Administrator

Research Ethics Office

Old Main Building, PN221

Massey University

Private Bag 11 222

Palmerston North

SECTION B: DECLARATION (*Complete appropriate box)*

ACADEMIC STAFF RESEARCH

Declaration for Academic Staff Applicant

I have read the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants. I understand my obligations and the rights of the participants. I agree to undertake the research as set out in the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants. My Head of Department/School/Institute knows that I am undertaking this research. The information contained in this notification is to the very best of my knowledge accurate and not misleading.

Staff Applicant's Signature ..... Date: .....

STUDENT RESEARCH

Declaration for Student Applicant

I have read the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants and discussed the ethical analysis with my Supervisor. I understand my obligations and the rights of the participants. I agree to undertake the research as set out in the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants. The information contained in this notification is to the very best of my knowledge accurate and not misleading.

Student Applicant's Signature Date:

Declaration for Supervisor

I have assisted the student in the ethical analysis of this project. As supervisor of this research I will ensure that the research is carried out according to the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants.

Supervisor's Signature Date:

Print Name

GENERAL STAFF RESEARCH/EVALUATIONS

Declaration for General Staff Applicant

I have read the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants and discussed the ethical analysis with my Supervisor. I understand my obligations and the rights of the participants. I agree to undertake the research as set out in the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants. The information contained in this notification is to the very best of my knowledge accurate and not misleading.

General Staff Applicant's Signature Date:

Declaration for Line Manager

I declare that to the best of my knowledge, this notification complies with the Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants and that I have approved its content and agreed that it can be submitted.

Line Manager's Signature Date:

Print Name

Appendix II. Ethics Approval Acceptance

Massey University

FILE

OFFICE OF THE ASSISTANT
TO THE VICE-CHANCELLOR
(Research Ethics)
Private Bag 11 222
Palmerston North 4442
New Zealand
T 64 6 350 5573/350 5575
F 64 6 350 5622
humanethics@massey.ac.nz
animalethics@massey.ac.nz
gtc@massey.ac.nz
www.massey.ac.nz

27 February 2009

Aliena Wieland
24 Kate Sheppard Avenue
Torbay
NORTH SHORE 0630

Dear Aliena

Re: Research on the Links between Packaging and Shelf Placement of Groceries in Supermarkets and Purchases by Elderly People

Thank you for your Low Risk Notification which was received on 25 February 2009.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor Sylvia Rumball, Assistant to the Vice-Chancellor (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

Sylvia Rumball

Sylvia V Rumball (Professor)
Chair, Human Ethics Chairs' Committee and
Assistant to the Vice-Chancellor (Research Ethics)

cc Dr Aruna Shekar
School of Engineering and Advanced Technology
Albany

Mr Tom Robertson
School of Engineering and Advanced Technology
PN456

Prof Don Cleland, HoS
School of Engineering and Advanced Technology
PN456

Appendix III. Ethnographic Consent form

Te Kunenga ki Pürehuroa

Consent form for

Research on the links between packaging and shelf placement of groceries in supermarkets and purchases by elderly people

Description:

You are invited to participate in a research study on the links between the packaging and shelf placement of groceries and the purchasing decisions of elderly people. The purpose of this research is to find out whether or not a link exists and if so how strong it is.

You will be asked to go grocery shopping while being observed. Your shopping decisions will be noted and you will later be asked questions regarding the purchases you have made.

Risks and Benefits:

As we are not asking you to do anything you would not normally do during a shopping trip we do not foresee that you will be placed in a potentially harmful or damaging situation.

This research may be used in the future to alter packaging of items to make them more manageable or inform supermarkets of problems with the way they lay out their shelves.

Time Required:

Your participation in this research should take not more than 2 hours. The length of time will be determined by the length of the shopping trip and questioning thereafter

Participants' Rights:

If you have read and understood this form and what required of you if you participate, and have decided to take part in the research, please understand that you participation is voluntary. You have the right to stop and withdraw your consent at anytime. You also have the right to refuse to answer any questions which you do not want to.

Privacy:

You individual privacy will be maintained in the event that data obtained from this research is published or handed on to any other parties.

For Questions, Concerns Or Complaints Regarding This Research Please Contact:

Student	Supervisor	Supervisor
Miss. Aliena Wieland	Dr. Aruna Shekar	Mr. Tom Robertson
Mob: 0274222149	Ph: 414 0800 ex. 9729	Ph: 414 0800 ex. 4941
Email: aliena.wieland@gmail.com	Email: a.shekar@massey.ac.nz	Email: t.r.robertson@massey.ac.nz

By signing this document you agree to participate in the above mentioned study and that you have been informed of the procedures and what is required of you.

_____ _____

Signature of Adult Participant Date

Appendix IV. Packaging Survey Introduction Letter

Massey University

Do you have problems with opening grocery packaging?

Are you aged 65 or above?

I would like to know what you think

Hi my name is Aliena Wieland and I am currently doing a Masters in Product development at Massey University. You are invited to participate in a research study on the links between the packaging and the purchasing decisions made by people aged 65+. The purpose of this research is to find out whether or not a link exists and if so how strong it is.

We would also like to know what, if any, problems you have with supermarket goods, and with which particular types of packaging.

The Following questionnaire should not take longer than 10 minutes to complete and just asks for your opinion on some packaging issues and what you may have problems with.

There is no right or wrong answer as the whole point of the survey is to find out what you think.

This research may be used in the future to alter packaging of items to make them more manageable and create a guideline by which “better” packaging can be developed

Privacy:

You individual privacy will be maintained and all personal data will remain confidential, so please feel free to give your honest opinion.

Thank you for your help

Regards

Aliena Wieland

Appendix V. Packaging Survey

Massey University

Packaging Questionnaire for:

_____

(Please print your name above)

Research on the links between packaging of groceries in supermarkets and purchases by people 65+

Hi my name is Aliena Wieland and I am conducting this study as a master's project in Product Development Engineering at Massey University. You have been invited to give us your opinion on some of the issues with common grocery item packaging.

I am trying to determine what types of problems people aged 65 + have with common grocery packaging. This will help to determine what steps need to be taken when designing packaging in order to make them more user-friendly.

Groceries and their packaging play a very important role in our life. In this section, we would like to find out your shopping habits and what you think of grocery packaging that you have encountered.

All personal information will remain confidential and any information you give in this questionnaire will not be linked back to your name or person, when the data is collated and reported.

Please answer the following:

Question 1

How often do you shop for groceries? (Please circle one)	Once a day	2-3 times per week	Once a week	Once a month	I don't shop for groceries

Question 2

	Very often	Frequently	Sometimes	Seldom	Never
How often do you choose groceries because of the packaging they are in?	1	2	3	4	5

Packaging Attributes

We are interested in finding out more about which grocery packaging you **like** or **dislike**, and the reasons why you like or dislike it.

Question 3

Using the following scale, please indicate **how important** each factor is to you when you choose a **food product**.

Packaging attributes considered in making a grocery purchase	Not important at all	Not important	Doesn't matter	Somewhat important	Very Important
Price	1	2	3	4	5
Safety of packaging (can you get injured opening it?)	1	2	3	4	5
Size of pack	1	2	3	4	5
Recyclability	1	2	3	4	5
Opening type	1	2	3	4	5
Storage	1	2	3	4	5
Label	1	2	3	4	5
Brand	1	2	3	4	5
Versatility/ Can you store it in the fridge, a backpack, etc…	1	2	3	4	5
Materials the pack is made out of	1	2	3	4	5
Shape	1	2	3	4	5
Colour	1	2	3	4	5
Quality/freshness labelling	1	2	3	4	5
Other (please specify)					
	1	2	3	4	5
	1	2	3	4	5

If you dislike any certain packaging types please give reasons below. (If you need more space write on the back of this page)

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Question 4

Using the following scale, please indicate how much you **like** or **dislike** the **packaging types** of grocery products you purchase. **(This does not refer to the product)**

Preferred packaging styles for food choices	Dislike very much	Dislike	Neither like nor dislike	Like	Like very much
Glass bottles & jars	1	2	3	4	5
Zip lock bags	1	2	3	4	5
Tin cans	1	2	3	4	5
Foil packages (potato chips and biscuits)	1	2	3	4	5
Plastic packaging on cheese blocks	1	2	3	4	5
Cardboard boxes (cereals etc.)	1	2	3	4	5
Tetra paks (cardboard containers that custard and some milk comes in)	1	2	3	4	5
Aluminium cans	1	2	3	4	5
Plastics yoghurt pottles	1	2	3	4	5
Cellophane	1	2	3	4	5
Others (please specify)					
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

Question 5

Using the following scale, please indicate **how often** you have ever encountered problems with the following **opening types** of the grocery packaging

Do you have problems with these grocery packaging devices?	Never	Seldom	Sometimes	Frequently	Very Often
Aluminium drink can ring pulls	1	2	3	4	5
Ring pull (like on a ginger beer or Macs beer bottles)	1	2	3	4	5
Reseal able bags (like nuts come in)	1	2	3	4	5
Twist off cap (like on juice and older style milk bottles)	1	2	3	4	5
Screw off lid (like on a jam glass jar)	1	2	3	4	5
Heat sealed foil bags (like potato chips and biscuits)	1	2	3	4	5
Pull out 'pop the top' closure (like on a water bottle)	1	2	3	4	5
Freshness peel off seals (under milk tops and juice tops)	1	2	3	4	5
Ring pull tins (tuna, backed beans, pet food)	1	2	3	4	5
Conventional tin cans	1	2	3	4	5

Are there any other packaging **opening types** you have problems with?

....

....

....

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Question 6

Using the following scale, please indicate **how often** you have ever encountered the **resealing** problems of the food packaging.

Resealing problems	Never	Seldom	Sometimes	Frequently	Very Often
Resealing a zip lock bag	1	2	3	4	5
Resealing a cap (like milk bottle)	1	2	3	4	5
Resealing a lid (like on jam glass jars)	1	2	3	4	5
Pushing back a pop-up closure (like on water bottle)	1	2	3	4	5

Any other **resealing** problems you encounter?

....

Question 7

Please indicate how often you encounter the following problems.

How often do you encounter the following food packaging problems?	Never	Seldom	Sometimes	Frequently	Very Often
Spillage when opening the packaging	1	2	3	4	5
Leakage during storage	1	2	3	4	5
Lid is too tight to take off	1	2	3	4	5
Label printing is too small to read properly	1	2	3	4	5
Too heavy to carry	1	2	3	4	5
Awkward to handle (difficult to pour or open, or pass along)	1	2	3	4	5
Have you ever asked for help when opening a food package?	Yes	No			

Question 8

If there is anything you wish to add comment on please feel free to do so here.
(If you need more space write on the back of this page)

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Just for demographic purposes we would like to know.

How old are you? ..... Or
Which age group do you belong to?

Under 65 ( ) 65 – 69 ( )

70 – 75 ( ) 76 – 80 ( )

80+ ( )

Please enter your contact detail below in case we have further question.

Name: .....

Address: .....

.....

Home phone: .....

Thank you very much. Your help is much appreciated.

Regards

Aliena Wieland

For Questions, Concerns Or Complaints Regarding This Research Please Contact:

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Appendix VI. Affinity Diagram

Celophane seals	Containers which cause problems	Foil Seals	Ring Pull Tins	Bottles
Cellophane seals on top of jars are hard to get into – he has to use a knife or scissors to pry them off.	Jimbo's fresh pet food which had a really hard to open lid	Plastic seals on the individual jelly pots	Finds ring pulls hard but has a gadget to open them	Needs to use the nut cracker in the scissors to open soft drink bottle
trouble with the cellophane type seals on masterfoods spice jars.	Can't easily open takeaway food containers as they have sharp thin edges which are hard to grip. There is no real lip to get a hold of	Yoghurts are not too bad but are still not easy to get into.	Ring pull tins like tuna, sardines, and canned fruit	Only buy screw top wines. Can't open corks on the bottles
Has problems with the shrink wrap plastic foil seals on olive oil bottles or the like. Ends up prying them off with a knife or scissors.	Strawberry punnets the plastic sealable kind are hard to open – has to slip a knife under to get it open.	Hummus or dip packaging with the foil seals under the lid can be very difficult. Will use a knife to open if needed	Rind pulls on Bundaberg ginger beer are hard as she can't use a ring puller on it.	Wine bottles are really hard to open
	Has a problem with the larger new fresh and fruity tubs. Problems with getting the lid off	Yogurt pottles seals are really hard to get a hold of and pull off	Major troubles with ring pull tin cans	Uses a nutcracker to get a grip on soft drink type bottles to open them, reseal them and then re open them. Can't open them even when opened before as her has are too weak
		Yoghurt pottles with foil seals are hard to open.	pull tab cans (tinned fruit) cat food	She open wine bottles with her nutcracker
		She has a problem opening the foil on top of cottage cheese pottles. Either the glue is to tough or the tabs that you hold on to are too small.	Problems with pull tabs on ginger beer and Macs beer type bottles	
		Can't pull open the individual fruit pottles' seals	Hates the rice bran oil seal. It has a ring in the top of it that needs to be removed	
			Ring Pull tins are a lot of trouble, she doesn't like them at all. Has to use a knife or similar tool to get under them.	
			The small ring pull tins like on tuna are even worse.	
			When given the choice between ring pull and normal can she will opt for the normal tin if the product comes in both i.e. tinned tomatoes. (she shows that here when product is the same she will choose due to the packaging type)	

Battery packs and blister packs	Perferatted cardboard seals	Plastic foil packs	Jars	Spray cans
Trouble getting into battery packs the back cardboard	Has problems opening the glad wrap holders	Biscuit packets as they can be difficult to get into – the foil ones with serrated edges	Jars like Jam jars which are not very thick/high are hard to grab with her gadget	Aerosol cans from backing spray – lid does not come off very easily Anything to spray is extremely difficult. Aerosol type sprays are really hard – fly spray, air fresheners (Has problems putting on her perfume can only use her left hand and can't always get it.)
Hard plastic shell pack used for a lot of hardware has to attack it with scissors	The tin foil and glad wrap dispensers are really hard to open	Uses a knife to get into rice cracker packets	With jars it's the motion needed as well as the grip strength and turning strength need that she lacks	
Battery packs are hard to get into the back of	Twinings tea packets with the tear opening are really hard to open.	Earnest adams raspberry foils packets are really hard to open	Any pasta jars and glasses are difficult to get into. Tends to get a pasta sauce that she likes in the can as she finds it easy to open can with her electric can opener	
Oral B refill packs are hard they have two layers of hard packaging the first is a foil backing which is hard to peel away and then each individual toothbrush head is further wrapped in a similar way to the battery packs where you have to get into a card board backing but the opening is not easy to open (see picture)	Persil laundry liquid is difficult	Needs to use scissor for biscuit packets as well as for the packets cereal is in inside the boxes	Jam jars are really difficult to get a grip on and open	
Has difficulty with the vac pac hardware products scome in	-Soap powder box seal	-Maggie soup mixes/sachets	Any Jars with wierd shaped lids are a problem	
Tends to have problems with the hearing aid battery packs. It is hard to get the batteries out. Also has problems getting batteries out of their typical packaging (cardboard backing with a clear plastic cover over the front.	Has a problem the perforated strip that needs to be pulled on glad wrap boxes to open them	Has problem with chip packets and especially 2 minute noodle packets can't get a hold of enough material to get a proper grip and even then her grip is often too weak	Likes coffee Nescafe gold but can't open the square lids on the jars (see pic) and therefore foregoes it.	
			Foregoes Moccona as well as she has problems with the jar. Instead she buys the budget one in a screw top jar she can open and mixes it with another variety in order to get a flavour she likes.	
		Biscuit rolls which are sealed in plastic foil hard to open but, get opened with a knife		
			Large jar lids are very awkward – the larger the lid the more difficult they are to open.	
			"big jar lids are very very awkward" " the bigger the it is the more awkward it is"	

Tools used	Freshness seals	Labeling	Child Proof	Other
She can't use the standard hand held electric can opener as she has not got enough strength to hold the cans up	Has an extreme problem with freshness seals on sauces. Will use a knife to get in but would not be able to get in to them	Labels on the rubbish bag packs are hard to decipher.	"of all the things I get this is the worst" referring to the dishwasher powder bottle by active. They have child proof lids. She can't push and turn at the same time, has to get her neighbour to open it for her and then she doesn't re close it properly. Can't stand child proof lids.	Tetra pack milk containers are hard to open
Uses scissors to open a lot with packaging	Has pliers with which she opens the freshness seals on T-sauce, dressing, milk	Problems with finding and seeing the used by date on the packaging	Other cleaning product lids... kid proof is also elderly proof is what she said	Can't tear the small individual sachets with the scissors that indicate tear hear
She struggles to get pills out of foil packets and hast to scissors to open the packet then has to shake and more the foil to get the pills out.	Milk seals which are under the lids on bottle like anchor are not large enough – they are not easy to get a grip on	Has to be careful with buying chocolates for her grandchildren as one of them is allergic to peanuts. So needs to be able to read the label	Has great trouble with the lid on dishwashing powder bottle. Gets someone to open it for her and then never closes it completely	Individual shampoo sachet often don't even have a little slit so they are impossible to open without scissors
	Tamper proof seals on juice bottles	Says that manufacturers should make use by dates easier to read, larger printing better position	Janola toilet cleaner is a lid where she has a lot of problems with as you need to grip hard to counteract the child safe mechanism	Can't open the fresh pasta packets that are a tray with foil covering the top without the help of a knife or scissors or other sharp object
	Knife to cut or prise off the seals on dressing bottle or bottles like keri juice where they have a freshness seal	Has a problem when packaging is red and white in colour	A lot of cleaning products are hard to get into and not elderly friendly	Just juice tetra paks where the foil seal on the inside is often hard to pull off, has to use a knife to get in
	Problems with the size of tabs on the milk bottles	Has problems with writing on the packages, with small writing certain colour in particular. She can't deal with white on black. Needs it to be black on white.	Won't buy bleach because she can't open the bottles	Peanut butter jar seals plus lid with the tamper seal
	-Milk rip off fresh seals		Toilet cleaners are really hard to get the lid off. Ovnce opened I just leave the lid off	Has a problem with the tabs to open pill jars and the tabs a tinny and they often rip off.
	Bay harvest Juice has a really hard seal to open under the lid			And has a problem with griping the perforated seal lids. Both shown below. If they don't open she uses a knife to cut open the seal
	-Milk and juice tetra rip off tap seals			Has problems with foil tear open packaging
				Shampoo bottle often fall over in the shower as they are tall and skinny. They don't fit on the shower shelf that she has .
				Can't open the old milk carton style tetra pac where you have to squeeze and push.
				Has trouble sealing re-sealable bags

Appendix VII. Ethnographic Participants Notes

Participant A:

- Male
- Aged 70
- Lives alone in a council/community retirement village/group of flats
- Used to serve in the army as a nurse so receives some assistance like reading glasses form some services group
- Was belatedly diagnosed with diabetes and therefore is numb from the knee down. He cannot feel anything from the knees down which stops him from driving and no control of the pedals.
- Has problems opening some of the wine screw tops
- Fruit and vegetables bags in the supermarket where you get your own veggies can be hard to get into at the begging as the two sides can be hard to separate.
- Can't buy pre-packed meat and vegetables and the packets are too bug – family sized
- Cellophane seals on top of jars are hard to get into – he has to use a knife or scissors to pry them off.

- He finds ring pulls hard but has a gadget to open them (see pick)
- Plastic seals on the individual jelly pots. These are the same sort of seals that can be found on individual tinned fruit servings by SPC.
- Tamper proof seals on juice bottles (Keri juice the foil freshness seals)
- The tamper proof lids which have the top lid and the seal ring under it. He says he has to cut the gap open with a knife or other sharp object in order to get into it.
- Has great trouble getting into battery packs the back cardboard where it has an "easy" pull rip open tab but it never works properly and often only rips half open and then the puller part rips off.

- Hard plastic shell pack used for a lot of hardware has to attack it with scissors else they are impossible to get into.
- The labels on the rubbish bag packs are hard to decipher. It is hard to see which size is which as when they are wrapped in a roll/tube you can't read the bag and the sticker labelling is not very clear. It is hard to see the difference between 40, 60 and 80L bag packs
- Pre-packed fish or frozen ready meals are hard to open when hot as there is not enough plastic to hold on to and once cooked it is easy to burn yourself on them.
- Again with the sizing there are only large packets of grated cheese available. So it often goes off before he can use it all up.

Participant B:

- Female
- Aged 78
- Very to the point and no nonsense
- "Sharp as a tack"
- Lovely easy going way about her but comes about as a bit of a hard case.
- Has the means to live in a comfortable retirement village which is a two bedroom flat. Lives by herself, Her fat is filled with colourful things and books which indicate that she still keeps her mind active.
- Needed a walking stick with her for support while taking part in the accompanied shopping trip but used it more to test out the ground than for support. She mentioned that she had problems with one eye which made depth perception for her very difficult especially steps.
- She is short, under 155cm, and has difficulty in reaching thing at the top of shelving.
- Has family, 2-3 children but no grandchildren which she talked about with a little longing.
- Likes classical music and going to concerts.
- Doesn't like play bowels or teams sports so much as then she expected to go and the team is reliant on her, so would feel bad not being able to make it.
- Still watches what she eats, although will indulge every now and then.
- Complaint about the packages being too large all the meat is packed off in family sized packs
- Gets sick of having to freeze off all extra meat
- Freezer ends up filled with extra portions or she ends up cooking in bulk and then freezing the extra food
- Jars like Jam jars which are not very thick/high are hard to grab with her gadget.
- Can't get them open without a lot of difficulty
- Has gadgets to open jars and bottles but they won't do all of them.

- Needs to use the nut cracker in the scissors to open soft drink bottle (tonic water)
- Has a gadget to open ring pull tins but cannot get them open without (see video)
- Can't open the ring pull tins without the gadget, can't get her fingers under the ring to pull on
- Has pliers with which she opens the freshness seals on T-sauce, dressing, milk etc
- Has great trouble with the lid on dishwashing powder bottle. Gets someone to open it for her and then never closes it completely.
- Other cleaning product lids... kid proof is also elderly proof is what she said
- She also had problems with finding and seeing the used by date on the packaging
- When she got home she had a look and wrote in large letters all dates on the packet clearly visible

Participant C:

- Female
- Aged 65-69
- Major troubles with ring pull tin cans
- Use a can opener on tin cans
- Has a replacement elbow, and broke her wrist a while ago
- Has problems opening the glad wrap holders
- Has a problem when packaging is red and white in colour
- Size is a challenge – everything is geared toward people shopping for more than one person. Never have special on smaller product only on the larger ones
- Labelling for used by date is very important
- Picks up shopping and finds full bags hard to carry
- Material used is important for freshness
- Shape is important as the larger boxes are hard to handle
- Problem with safety of pack
- Likes glass, thinks it may be a bit old fashioned of her
- Damage - Has hurt herself on the edge of tin cans
- Says that manufacturers should make use by dates easier to read, larger printing better position
- Things are often too heavy to carry, but as well as this they are often awkward in their shape
- Just juice tetra paks where the foil seal on the inside is often hard to pull off, has to use a knife to get in

Participant D:

- Female
- 64
- Goes shopping by herself with a list and sticks mainly to the list.
- Daughter and daughter ain law and son are all personal trainers so she makes sure to look for healthier options “low fat” “heart tick”
- Likes to travel. She’s been to turkey and to a lot of places in Europe. Works with special need children.
- Has osteoarthritis in both hands and says she has problems especially when she needs to grip objects
- She can only buy screw top wines. Can’t open corks on the bottles
- Used to buy corks “but the last few times I haven’t been able to get them open, I’ve really struggled.” Almost broke the bottle opener.
- Looked at prices. She said there was no point in buying something at full price when it’s often on sale the next week.
- Strawberry punnets the plastic sealable kind are hard to open – has to slip a knife under to get it open.
- Hummus or dip packaging with the foil seals under the lid can be very difficult. Will use a knife to open if needed.
- Seems to use scissors or knife to get into most things that she has problems with.
- The rind pulls on Bundaberg ginger beer are hard as she can’t use a ring puller on it.
- Has an electric can opener which helps her to open the cans.
- She has to be careful with buying chocolates for her grandchildren as one of them is allergic to peanuts. So needs to be able to read the label.
- Can’t open bottle with tips of fingers. She has to use the muscle in between her thumb and forefinger. Can’t open soft drink bottles. She gets her neighbour to open anything she can’t get into.
- Uses a knife to get into rice cracker packets.
- “boxes aren’t too bad... things that are like biscuits once I’ve got them I’ll cut across them with scissors”
- Any pasta jars and glasses are difficult to get into. Tends to get a pasta sauce that she likes in the can as she finds it easy to open can with her electric can opener.
- Tins are alright to open as she has a good can opener
- Hates the rice bran oil seal. It has a ring in the top of it that needs to be removed.
- Anything to spray is extremely difficult. Aerosol type sprays are really hard – fly spray, air fresheners.
- Has problems putting on her perfume can only use her left hand and can’t always get it.

- Has an extreme problem with freshness seals on sauces. Will use a knife to get in but would not be able to get in to them

Participants E and F:

Both are still outgoing and although Participant E has very weak knees and has problems walking his is still a fun loving character. Not so active any more. Very family orientated

Take part in Tai Chi twice a week.

First thing they mentioned was an electronic toothbrush (a Colgate where you c an change batteries) that they had recently bought. They both said that they had the hardest time trying to open it with both scissors and a knife. It is a vac shrink wrap type packaging. Participant E says he almost “had to use a hacksaw” to get it open.

Participant E:

- Male
- Aged 89

Problems with:

- Milk and cream tops, seals underneath
- Jam Jars
- Bottle tops (wine, coke, tonic)
- Has no feeling in his finger or thumb due to arthritis which is clearly visible and when observed it is clear to see that he struggles
- Needs to use scissor for biscuit packets as well as for the packets cereal is in inside the boxes
- Has great difficulty with anything that requires a lot of dexterity, gets his wife to open a lot of packaging he has problems with (but she cannot open them all)

Participant F:

- Female
- Aged 79
- Really hard to open plastic bags that come in rolls like sandwich bags and the bags in the supermarkets for self serve fruit
- The seals on the top of milk and cream are really hard to open.
- Bay harvest Juice has a really hard seal to open under the lid
- Yogurt pottles seals are really hard to get a hold of and pull off
- Needs a knife to open the fresh pasta seals.
- Individual fried rice easy to open as they tear quite well
- The tin foil and glad wrap dispensers are really hard to open

- Jam jars are really difficult to get a grip on and open
- Twinings tea packets with the tear opening are really hard to open.
- Wine bottles are really hard to open
- Persil laundry liquid is difficult
- Earnest Adams raspberry foils packets are really hard to open

If there are any packaging types that both participants E and F cannot open then they wait until a friend or family member drops by and have them open it for them.

Participant G:

- Female
- Aged 68
- Lives by herself in a council flat as she could no longer afford to keep her home due to medical costs
- Generally goes shopping monthly
- She managed to break both arms and a leg in a fall some years ago and was left with impairment in both arms and her left shoulder.
- She has very little strength in either arm and her left arm doesn't not hang properly it hangs facing forward rather than the side
- Bone graft in right arm has lead to loss of feeling in right fingers and nerve damage
- Damage to her hands make holding things difficult – strength will suddenly let out and she will drop things without volition
- Small kitchen makes it really difficult to get around
- Doesn't like large containers and portions that the products come in
- **Does not buy a certain juice as she cannot open the seal under the lid** (single serve type juice)
- She uses a tool of some sort to open most packaging. Whether it be scissors, pliers, a grip mat for jars, a seal breaker for jars or a tightening loop device for bottles and jars.
- She struggles to get pills out of foil packets and hast to scissors to open the packet then has to shake and more the foil to get the pills out.
- She has trouble reaching half of the shelves at pack and save. Often wants what is on the top shelf but can't reach so she will get some one to help her
- Sometimes you don't get a choice with packaging and you just have to buy it anyway
- Uses scissors to open a lot with packaging
- She suggests one way to combat problematic shelving is to arrange a type of product up and down shelf facing rather than across, then everyone could reach it.
- Has a problem with the tabs to open pill jars and the tabs a tinny and they often rip off. And has a problem with griping the perforated seal lids. Both shown below. If they don't open she uses a knife to cut open the seal

- Yoghurt pottles with foil seals are hard to open. Has a problem with the larger new fresh and fruity tubs. Problems with getting the lid off

- She has a problem opening the foil on top of cottage cheese pottles. Either the glue is to tough or the tabs that you hold on to are too small.
- She had to give away all her Tupperware as it was too hard to open
- Problems with pull tabs on ginger beer and Macs beer type bottles
- Uses a nutcracker to get a grip on soft drink type bottles to open them, reseal them and then re open them. Can't open them even when opened before as her has are too weak
- Has problem with chip packets and especially 2 minute noodle packets can't get a hold of enough material to get a proper grip and even then her grip is often too weak
- One touch can opener is really good for opening cans but it won't some off the can if it stops mid way though a cycle as there is no release mechanism and to change the batteries you have to get at the underside which is where the can is during a cycle. She has to guess when the batteries will run out before they do so that a can doesn't get stuck

- She can't use the standard hand held electric can opener as she has not got enough strength to hold the cans up
- She open wine bottles with her nutcracker
- Buys on taste fist, would rather have a little less and better quality
- Can't break chocolate pieces off as hands are too weak
- Has a problem the perforated strip that needs to be pulled on glad wrap boxes to open them
- Has trouble sealing re-sealable bags
- Can't easily open takeaway food containers as they have sharp thin edges which are hard to grip. There is no real lip to get a hold of
- Tetra pack milk containers are hard to open
- Makes food in bulk and then freezes it
- Buys a lot of food in cans as they don't go off or perish easily. Always handy
- Has a Chinese tea which she likes to drink but to keep it fresh she pulls the foil over the rim to create a tighter seal between the container and the lid which makes the lid hard to get off
- Can't tear the small individual sachets with the scissors that indicate tear hear
- Individual shampoo sachet often don't even have a little slit so they are impossible to open without scissors
- Can't open the fresh pasta packets that are a tray with foil covering the top without the help of a knife or scissors or other sharp object
- Larger portions of packets often don't get used up quickly enough and will go off or stale
- Can't pull open the individual fruit pottles' seals
- Problems with the size of tabs on the milk bottles
- Needs to choose her shampoo bottles carefully as she can't squeeze them all due to her lack of strength in hands. Checks that she can open them before she buys them as some are not easy to open. They often break if they are dropped and then shampoo or conditioner leaks everywhere
- Problems when packaging is so rigid she can't get the product out. Shampoo bottles often have a small base and don't stand well.

Participant H:

- Female
- Aged 73
- Only ever goes shopping for what is needed
- Tries really hard to budget and not impulse buy
- Mussel tongs were hard to use in the shop (not packaging directly)
- Pull tab cans (tinned fruit) cat food
- Money was the big driver in every purchase except for the cat food, where she bought what the cat liked and would eat although it was the gourmet brand and Jimbo's fresh pet food which had a really hard to open lid.

- I tried it and hurt my finger doing so. It is just really tight and digs into the flesh
- Milk and juice tetra rip off tap seals
- Peanut butter jar seals plus lid with the tamper seal
- Milk rip off fresh seals
- Maggie soup mixes/sachets
- Uses a knife to lift the ring on ring pull tins so she can get her finger under
- Will take groceries from bottom shelf if the item is there it takes her a little time though to bend down and up again - Did not look comfortable.
- She said she asks for help when she can't reach the item
- Soap powder box seal

Participant I:

- Fit easy going lady in her
- Aged 70-75
- Lives in a village in Milford which have signs form East Coast Bays on them.
- Community Housing for older people
- Small basic living quarter. One bedroom, cottage
- Open and friendly
- Used to go tramping and rock climbing. Did the Tongariro crossing. Used to belong to a tramping club and they went all over the place. Not much on the south island though as it used to cost a lot more to get to there than Australia, so she went to Australia a few times.
- Has a few books and mementos but not much clutter as there is not much room in her living area.
- We did not go shopping but she had kept previous receipts so we talked about them and she showed me difficult packaging that she had on her and talked about ones which had annoyed her in the past.
- Has trouble with the cellophane type seals on Masterfoods spice jars. Can't get fingernails under properly, ends up using a knife to pry the seal off
- Has trouble with ring pull tins like tuna, sardines, and canned fruit. Uses a knife to pry up the ring so that she can get her finger under and into the ring
- She finds it difficult to open packets like MinTies and foil packets where there is a serrated tear edge. Finds that she can often not get a proper grip on them
- In order to open jars like pasta jars or jam jars she puts them into hot water or thumps them on the ground.
- If she still has problems with it she uses a rubber grabber tools but it is still difficult she says it "aids, but wouldn't say that it solves the problem"
- Problem with the cellophane on cucumbers
- She can't use her hands to open packaging properly as she has a type of tendonitis in her hands so is really weak
- Milk seals which are under the lids on bottle like anchor are not large enough – they are not easy to get a grip on

- Yoghurts are not too bad but are still not easy to get into.
- She said that she will buy things in bad packaging if needed but not necessarily if she wants it. The want in that case has to be a strong want for her to buy it
- She uses a knife to cut or prise off the seals on dressing bottle or bottles like Keri juice where they have a freshness seal on them which have tinny little tabs on side to hold on to
- With child proof products when she can get them open she uses it and then only ends up closing them half way – Janola toilet cleaner is a lid where she has a lot of problems with as you need to grip hard to counteract the child safe mechanism, and it is a small lid
- Battery packs are hard to get into the back of. The rip open tabs often come off half way and then you can get in properly.
- Oral B refill packs are hard they have two layers of hard packaging the first is a foil backing which is hard to peel away and then each individual toothbrush head is further wrapped in a similar way to the battery packs where you have to get into a card board backing but the opening is not easy to open (see picture)
- With jars it's the motion needed as well as the grip strength and turning strength need that she lacks. Although she does understand that the seals need to be tight in order for the product to stay fresh
- Toilet rolls in the big plastic packets are hard to get into so she just uses a knife or scissors or whatever else may be hand to stab it and rip the packaging apart
- "all things are too tight and too secure"
- Aerosol cans from backing spray – lid does not come off very easily
- Irritated with opening biscuit packets as they can be difficult to get into – the foil ones with serrated edges
- She likes snap lock closures but hates that you have to cut a lot of them open first – or when you don't cut then it's a tear open which again she has difficulty with

Participant J:

- 76
- Still active and outgoing. Not very keen on the internet but does use it to email.
- Finds it is a hassle to get it out and turn it on.
- Likes to go dancing – ballroom and Latin American
- Goes down to the beach a few times a week for a walk. Live 5minutes walk from the beach.
- Goes to a walking group with others once a month. Very meticulous and likes to have order, likes to decorate her apartment.

- Took part in a course by Unitec or similar which was for teaching adults. It was an up skill type course. Via correspondence. It also helped her meet a few people as they met every few weeks for updates.
- Has hearing difficulties for which she has and aid and also has onset arthritis in her hands.

- Tends to buy her fruit and vegetables and the grocers rather than the supermarket. She only buys them at the supermarket if they are on special.
- Tends to have problems with the hearing aid battery packs. It is hard to get the batteries out. Also has problems getting batteries out of their typical packaging (cardboard backing with a clear plastic cover over the front.
- Gets annoyed as it is often larger packets that are on sale or it's two for one but she never needs two of anything.
- She'll end up cooking off larger portions of meat and then freezing them in portion sizes.
- Ring Pull tins are a lot of trouble, she doesn't like them at all. Has to use a knife or similar tool to get under them. The small ring pull tins like on tuna are even worse.
- When given the choice between ring pull and normal can she will opt for the normal tin if the product comes in both i.e. tinned tomatoes. (she shows that here when product is the same she will choose due to the packaging type)
- Has no problem with normal tins as she has a good can opener that she does not have problems with.
- To get into jars she has a tool which works really well (see pic)
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- Will heat up the lid which she finds helps a lot
- Has a problem with writing on the packages, with small writing certain colour in particular. She can't deal with white on black. Needs it to be black on white.
- Has problems with foil tear open packaging

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- Has problems tearing the top properly and then will also have problems resealing the package. She buys nuts and dried fruit in these packages. Likes coffee Nescafe gold but can't open the square lids on the jars (see pic) and therefore foregoes it. Foregoes Moccona as well as she has problems with the jar. Instead she buys the budget one in a screw top jar she can open and mixes it with another variety in order to get a flavour she likes.
- 

- Biscuit rolls which are sealed in plastic foil hard to open but, get opened with a knife

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- Has problems with the shrink wrap plastic foil seals on olive oil bottles or the like. Ends up prying them off with a knife or scissors.
- 

- Large jar lids are very awkward – the larger the lid the more difficult they are to open.
- “big jar lids are very awkward” “ the bigger the it is the more awkward it is”
- Absolutely hates square shaped jars as they are not natural to hold and are awkward to open.
- She finds that a lot of the budget bard packaging is easier to open. They have less fuss openings
- Shampoo bottle often fall over in the shower as they are tall and skinny. They don’t fit on the shower shelf that she has .
- Hates that they are so wide near the opening and that she can’t get all the last bits out.
- With toothpaste she prefers the older screw top types to the new flip tops.

- On milk bottles that now have foil freshness seals she prefers the anchor type openings where they have a pull tab on the side to the meadow fresh ones which have a centre flap seal.
- “of all the things I get this is the worst” referring to the dishwasher powder bottle by active. They have child proof lids. She can’t push and turn at the same time, has to get her neighbour to open it for her and then she doesn’t re close it properly. Can’t stand child proof lids.
- Won’t buy bleach because she can’t open the bottles
- A lot of cleaning products are hard to get into and not elderly friendly
- Can’t open the old milk carton style tetra pac where you have to squeeze and push.

Appendix VIII. THE PRINCIPLES OF UNIVERSAL DESIGN

Version 2.0 - 4/1/97

Compiled by advocates of universal design, listed in alphabetical order:
Bettye Rose Connell, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story, and Gregg Vanderheiden

Major funding provided by: The National Institute on Disability and Rehabilitation Research, U.S. Department of Education

UNIVERSAL DESIGN:

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

The authors, a working group of architects, product designers, engineers and environmental design researchers, collaborated to establish the following Principles of Universal Design to guide a wide range of design disciplines including environments, products, and communications. These seven principles may be applied to evaluate existing designs, guide the design process and educate both designers and consumers about the characteristics of more usable products and environments.

The Principles of Universal Design are presented here, in the following format: name of the principle, intended to be a concise and easily remembered statement of the key concept embodied in the principle; definition of the principle, a brief description of the principle's primary directive for design; and guidelines, a list of the key elements that should be present in a design which adheres to the principle. (Note: all guidelines may not be relevant to all designs.)

PRINCIPLE ONE: Equitable Use
The design is useful and marketable to people with diverse abilities.

Guidelines:

1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.
1b. Avoid segregating or stigmatizing any users.
1c. Provisions for privacy, security, and safety should be equally available to all users.
1d. Make the design appealing to all users.

PRINCIPLE TWO: Flexibility in Use
The design accommodates a wide range of individual preferences and abilities.

Guidelines:

2a. Provide choice in methods of use.
2b. Accommodate right- or left-handed access and use.
2c. Facilitate the user's accuracy and precision.
2d. Provide adaptability to the user's pace.

PRINCIPLE THREE: Simple and Intuitive Use
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

3a. Eliminate unnecessary complexity.
3b. Be consistent with user expectations and intuition.
3c. Accommodate a wide range of literacy and language skills.
3d. Arrange information consistent with its importance.
3e. Provide effective prompting and feedback during and after task completion.

PRINCIPLE FOUR: Perceptible Information
The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
4b. Provide adequate contrast between essential information and its surroundings.
4c. Maximize "legibility" of essential information.
4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

PRINCIPLE FIVE: Tolerance for Error
The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
5b. Provide warnings of hazards and errors.
5c. Provide fail safe features.
5d. Discourage unconscious action in tasks that require vigilance.

PRINCIPLE SIX: Low Physical Effort
The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

6a. Allow user to maintain a neutral body position.
6b. Use reasonable operating forces.
6c. Minimize repetitive actions.
6d. Minimize sustained physical effort.

PRINCIPLE SEVEN: Size and Space for Approach and Use
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

7a. Provide a clear line of sight to important elements for any seated or standing user.
7b. Make reach to all components comfortable for any seated or standing user.
7c. Accommodate variations in hand and grip size.
7d. Provide adequate space for the use of assistive devices or personal assistance.

Please note that the Principles of Universal Design address only universally usable design, while the practice of design involves more than consideration for usability. Designers must also incorporate other considerations such as economic, engineering, cultural, gender, and environmental concerns in their design processes. These Principles offer designers guidance to better integrate features that meet the needs of as many users as possible.

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Appendix IX. Advertisement for Participants

“WANTED

A range of people aged 70-80 years with a little spare time (1-2 hours)
for research being conducted at Massey University on packaging problems being faced by people living by themselves

You must be living by yourself or with a partner but without aid or extra assistance with day to day tasks

your help would be much appreciated and will help to better understanding how you perceive the packaging of common items of use in the supermarket”