Now you see me, now you don't?

Effects of choice set configuration in complex choice tasks

By

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Abstract

This dissertation considers stimulus-based influences on consumer decision-making. Context effects, referred to as *set configuration effects* in this dissertation, have repeatedly been shown to influence choices consumers make. For example, the choice probability of an alternative increases when a similar, but inferior alternative is added to a set originally containing two alternatives. Studies examining set configuration effects have generally been conducted using simple choice tasks; that is choice sets with few attributes and alternatives. Some authors have argued that increasing the number of alternatives and attributes, a more complex task, should reduce the probability of set configuration effects. Very few studies have utilized complex tasks to empirically test this assumption. Hence, the extent to which choice set configurations influence choice in complex tasks (i.e. more alternatives and attributes) has not been sufficiently examined. This thesis considers choice set configuration effects among consumers presented with complex choice tasks.

Five experiments were created to test the influence of set configurations on choice in more complex choice tasks than typically researched. Across these experiments, two set configurations were examined; *uniqueness* and *asymmetric dominance*. Uniqueness denotes a set configuration in which a single alternative is unique on an important attribute among heterogeneous competitor alternatives. Asymmetric dominance is a set configuration in which an alternative that is similar, but inferior, to another alternative is added to the set. Findings from several experiments indicate that these set configurations, uniqueness and asymmetric dominance, can increase choice of a target alternative in complex tasks.

A second key finding from this study is that asymmetric dominance can influence choice directly, as just discussed, *and* at a secondary level, or step. That is, an asymmetric dominance relationship among non-considered alternatives can influence choice among considered alternatives. To my knowledge, this type of *secondary level set configuration effect* has not been observed in the literature. Secondary level set configuration effects were moderated by task complexity (simple vs. complex) and product involvement (high vs. low): secondary level effects were observed in higher involving, complex tasks. I argue that salience of an asymmetric dominance relationship leads to a comparison of considered alternatives to a non-considered, yet good alternative. This comparison can help consumers discriminate among the considered alternatives. Findings lend support to this suggested mechanism for secondary level set configuration effects.

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To my son, Joakim…

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1. INTRODUCTION

Imagine you have just bought a house and need to purchase a washing machine. You visit a home appliances store and are presented many washing machines that vary on several attributes, such as clothing capacity, price, energy efficiency, noise level, etc. When you review the options, they appear equally attractive. How do you decide which washer to choose? Should you just pick at random? You then see that one of the alternatives has a steam function that is supposed to significantly improve cleaning ability, but this steam washer suffers on other attributes, such as having a high price and low clothing capacity. How likely is it that you will pick this unique steam washer? On the other hand, would you be more likely to choose a steam washer if there were several steam washers to choose from? This example asks us to consider if the configuration of the set of presented alternatives, such as similarity among alternatives, influences the choices we make. When there are few alternatives to choose from, prior research has found that certain configurations of alternatives predictably influence choice (Hamilton, Jiewen, and Chernev 2007; Huber, Payne, and Puto 1982; Pratkanis and Farquhar 1992; Simonson 1989; Tversky 1972; Yoon and Simonson 2008). However, prior research does not tell us if these same configurations influence choice when there are many alternatives to choose from. This dissertation addresses this gap in the literature by examining the influence of the configuration of alternatives on making a choice among many alternatives.

1.1. Background

As suggested above, prior research has shown that the configuration of a set of alternatives can systematically influence consumer decision making (Hamilton, Jiewen, and Chernev 2007; Huber, Payne, and Puto 1982; Pratkanis and Farquhar 1992; Simonson 1989; Tversky 1972; Yoon and Simonson 2008). For instance, having similar yet inferior competition (i.e. attraction effects), being unique (i.e. perceptual focus effects), or being perceived as a compromise between extremes (i.e. compromise effects) have all been shown to increase choice likelihood of a specific alternative. These types of *set configuration effects*, traditionally referred to as *context*

effects,[1] can be harnessed by marketers to increase sales of products and services. For example, a publisher may offer a relatively more expensive subscription to a combined print and online version of a magazine and a less expensive online-only version. Choice of the more expensive combined print and online version can be increased by offering a print-only subscription option for the same price as the print/online package (Ariely 2008). Whereas the consumer may have difficulty deciding between the initial two alternatives (online-only versus print/online package), the presence of a third inferior alternative (print-only) provides a reason to justify choosing the print/online package.

An important reason for set configuration effects is consumers' use of heuristics to simplify choices. Making a choice can be difficult for consumers, such as choices involving a trade-off between two important attributes. For example, a car may be powerful, yet not fuel efficient. To simplify such difficult choices, consumers often use heuristics to limit the amount of information processed rather than expending the effort to evaluate all available information about all alternatives (Bettman, Luce, and Payne 1998; Payne, Bettman, and Johnson 1993). Set configuration effects can occur when consumers limit information processing to simplify difficult choices, as illustrated by the subscription example above. There are several factors contributing to choice difficulty for the consumer (for a review see Bettman et al. 1998), such as the amount of information provided (Bettman et al. 1998), completeness of information (Yamagishi and Hill 1981), time pressure (Payne, Bettman, and Johnson 1988; Payne, Bettman, and Luce 1996), information format (Russo 1977), attribute correlation (Bettman and Johnson 1993), comparable vs. non-comparable choices (Bettman and Sujan 1987) and task complexity (Griffin and Broniarczyk 2010; Olshavsky 1979; Payne 1976). For instance, a larger number of alternatives and/or attributes used to describe alternatives increases the complexity of a choice task (task complexity) and can make choice more difficult in some instances (Payne 1976). A

[1] Context has been defined as "the set of alternatives under consideration" (Simonson and Tversky 1992). The term context is used extensively in the context effects literature. However, *context* is a broad and somewhat imprecise term. For example, the term context can refer to display characteristics, framing effects, and other settings beyond the scope of the configuration of the set of alternatives being considered (Carlson and Bond 2006). To be more precise, therefore, the term *set configuration* is used to refer to different set-ups of alternatives that might lead to effects on consumer choices. The term context in this document is reserved for discussions broader in scope than choice set configurations or when directly quoting prior research.

consumer deciding on a TV, for example, may have to choose among many brands, prices, quality levels, sizes and other features that make it difficult to choose a single alternative.

Task complexity has been identified as "the *number of alternatives* and/or the *number of attributes* on which the alternatives are evaluated [italics in original]" (Timmermans 1993, p. 95). This description implies that task complexity is equal to the number of information pieces; that is the number of alternatives times the number of attributes. Alternatives can also be assigned different values on attributes, so the number of levels on the different attributes will also influence task complexity. Although task complexity and choice difficulty are often associated (Griffin and Broniarczyk 2010; Olshavsky 1979; Payne 1976), a choice can be perceived to be easy or difficult irrespective of the complexity of the task (i.e. task complexity is conceptually distinct from choice difficulty). For example, a consumer may be faced with making a choice from among multiple alternatives described on many attributes. If the consumer has preferences that clearly favor one of the alternatives, the consumer should not find the decision difficult even though the task may be complex. In contrast, the consumer should find the decision to be difficult if many of the alternatives are equally attractive. Hence, it is important to note the difference between complexity as present in the task (i.e. the number of available information pieces) and difficulty as perceived by the consumer. The use of the term "task complexity" throughout this dissertation is restricted to addressing the number of alternatives and/or attributes in a set configuration. As such, task complexity does not indicate that a choice is necessarily perceived as difficult for a consumer to process.

1.2. Intended contribution

The intention of this dissertation is to test if previously observed set configuration effects will occur in more complex choice tasks than typically researched. Task complexity has been considerably researched with regard to decision-making and choice strategies (Dijksterhuis 2004; Johnson and Payne 1985; Klemz and Gruca 2003; Newell et al. 2009; Olshavsky 1979; Payne 1976; Payne et al. 2008; Swait and Adamowicz 2001; Timmermans 1993; Treisman and Gelade 1980). A key finding

from this research is that people often employ more than one choice strategy to make a decision when faced with a complex choice task (Klemz and Gruca 2003; Olshavsky 1979; Payne 1976). For instance, consumers may use one type of strategy to select alternatives that they will consider for choice, their consideration set, and another strategy to make their choice (Bettman et al. 1998).

Despite the research on task complexity in decision-making and choice cited above, the influence of task complexity specifically on choice set configuration effects has not generally been studied (Bettman et al. 1998). A choice set has been defined as "the set of alternatives considered immediately prior to choice (Ratneshwar and Shocker 1991)." In set configuration effects experiments, choice set configurations have typically been restricted to simpler choice tasks involving two alternatives described along two attributes (Ha, Park, and Ahn 2009). These two alternatives are generally joined by a third alternative with some defined relationship to the existing alternatives. The result is that one of the alternatives is chosen more often in the three alternatives set than in the two alternatives set (Chernev 2005; Hedgcock and Rao 2009; Huber, Payne, and Puto 1982; Pettibone and Wedell 2000; Sheng, Parker, and Nakamoto 2005; Simonson 1989; Yoon and Simonson 2008). However, consumers often face choice tasks including more than two or three alternatives and attributes (i.e. complex choice tasks). This suggests that studies examining set configuration effects in complex choice tasks are warranted, yet I am aware of only two studies to date that specifically addresses set configuration effects in complex choice tasks. Research by Lehmann and Pan (1994) examined the influence of new brand entries on consumers' consideration sets. In their second experiment, they created set configurations containing three alternatives that were meant to induce set configuration effects. To these sets, Lehmann and Pan added three more alternatives. Each of these new alternatives was very similar to one of the existing alternatives, such that three distinct pairs of very similar alternatives were present in each set for a total of six alternatives (i.e. a complex task). Since the focus of their research was on consideration of alternatives, they did not include choice as a dependent measure. Another study by Kivetz, Netzer, and Srinivasan (2004) suggests that a particular set configuration effect, the compromise effect, generalizes to complex choice tasks (e.g. five alternatives described on four attributes). The compromise effect refers to a set

configuration effect in which an alternative gains choice share when it becomes an intermediate, rather than an extreme alternative. Kivetz et al. (2004) created two sets of five alternatives with two of the alternatives varying from being intermediate to extreme between set configurations. Choice of each of these two alternatives was higher when they were intermediate rather than extreme alternatives. The authors of that study suggested that other set configuration effects might also generalize to complex choice tasks, but did not empirically test this assumption. In contrast, Bettman et al. (1998) suggest that increased task complexity should weaken set configuration effects (e.g. the attraction effect). They argue that more complex choice tasks should make the relationships between alternatives that lead to choice set configuration less salient (i.e. difficult to detect). Based on this reasoning and the relative absence of studies focusing on the role of task complexity in set configuration effects, Bettman et al. (1998) conclude that research explicitly focusing on the influence of complex tasks on set configuration effects is "one large gap in the literature" (Bettman et al. 1998, p. 209). This dissertation attempts to address this gap by exploring if and how set configuration effects occur in more complex choice tasks than previously studied.

1.3. Structure of the dissertation

This thesis is organized as follows. First, a review of the literature on consumers' use of choice strategies, effects of various choice set configurations on choice, and the roles of salience and task complexity in decision-making will be presented. Derived from this review, the influence of set configuration effects in complex choice tasks will be discussed and a set of hypotheses will be developed. Five experiments designed to test these predictions will then be described and results discussed. The first experiment will test for the occurrence of two known set configuration effects in complex choice tasks. This experiment will also test a moderating role of needing to justify one's decision. The second experiment will employ a different experimental design than that used in the first experiment to measure respondents' preferences before they are asked to make a choice. This will allow for comparing actual choice with what respondents are predicted to choose given their preferences. Known set configuration effects, as well as a new set configuration effect, termed a *secondary*

level set configuration effect, are examined. The third experiment will directly test set configuration effects in simple versus complex choice tasks and examine a moderating role of involvement on these effects. A more sensitive test of set configuration effects is then conducted in the forth experiment. This is accomplished by presenting each respondent with his or her own individualized set of alternatives to make a choice from rather than presenting the same alternatives to all respondents as in the earlier experiments. Additional product categories will also be introduced to increase generalizability of findings. The fifth experiment tests the mechanism for secondary level set effects. Table 1-1 highlights the key tests included in each experiment.

TABLE 1-1:
Overview of key tests by experiment

Tests	**Experiment**				
	1	**2**	**3**	**4**	**5**
Set configuration tests					
Uniqueness	✓	✓		✓	
Asymmetric dominance	✓	✓	✓	✓	
Secondary level effects		✓	✓	✓	✓
Moderating variables					
Need for justification	✓				
Task Complexity			✓	✓	
Involvement			✓	✓	✓
Product category				✓	

This dissertation will conclude with a general discussion of findings from across the five experiments and introduce a task complexity by involvement framework to categorize choice strategy usage and set configuration influence.

2. INFLUENCE OF SET CONFIGURATION ON CHOICE

Task complexity has been shown to affect how consumers process information and can influence their choices (Bettman et al. 1998; Payne 1976). The configuration of choice sets has also been found to influence choice from among a few alternatives (Hamilton, Jiewen, and Chernev 2007; Huber et al. 1982; Simonson 1989). However, prior research does not generally inform us if set configuration effects are weakened by increased task complexity as suggested by Bettman et al. (1998). I attempt to address this gap in the literature by first discussing the strategies consumers use to make choices and the amount and order of information they process in different decisions. Then, I turn to an overview of set configuration effects and highlight the role of salience in these effects. Because the focus of this dissertation is the influence of task complexity on set configuration effects, I then discuss task complexity and conclude this chapter with hypotheses arguing for the occurrence of set configuration effects in more complex choice tasks than typically studied.

2.1. Selection of choice strategies

Consumers want to minimize the effort involved in making a reasonable and informed choice (Shugan 1980). Whereas making a reasonable and informed choice implies reviewing all relevant information, effort minimization suggests reviewing less information. To cope with this trade-off, consumers typically employ one or more strategies to process information about alternatives in making a choice (Bettman et al. 1998; Hauser and Wernerfelt 1990; Wright 1975). These choice strategies may entail reviewing all information about alternatives, or a more selective review of some of the information (Payne et al. 1993; Payne et al. 1996). For example, a consumer considering a car may conduct a detailed evaluation of the information available about the car, or they may simply make a repeat purchase of the same model of car as their previous one without further processing. When only part of the information is evaluated, how much information is attended and the order in which it is processed may be different for each alternative or attribute. For instance, alternatives may first be screened to identify a set of alternatives to be considered for choice. This two-stage

process creates a cognitively manageable set of alternatives that meet some criteria, such as certain attribute level cut-offs on a number of attributes. These considered alternatives represent a *consideration set*; defined as the alternatives "that the consumer considers seriously when making a purchase and/or consumption decision" (Hauser and Wernerfelt 1990). If a consumer requires a certain level on an attribute, for example, they may eliminate any alternatives that don't meet this cutoff level from further consideration. The remaining alternatives may be scrutinized more carefully on the other attributes, suggesting that the consumer processes all information for a few alternatives and a limited amount of information for other alternatives.

2.1.1. Compensatory and noncompensatory choice strategies

Prior research suggests that choice strategies can be categorized by how information is processed to account for trade-offs in making a decision (see Bettman et al. 1998 for a review). Compensatory strategies usually involve processing most or all information in making a choice, whereas noncompensatory strategies employ cognitive shortcuts to selectively process part of the available information. *Compensatory* choice strategies allow for positive aspects to compensate for negative aspects. This suggests that consumers resolve trade-offs among attributes. To gain more of one attribute, they have to give up some level of another attribute for any given alternative: a car may not be fast, yet its' superior fuel efficiency may outweigh this limitation. *Noncompensatory* strategies, on the other hand, require an alternative to exceed a value on some attribute(s) in order to be chosen. Hence, a poor attribute level cannot be compensated by a good level on another attribute: a slow car may not be chosen no matter how fuel efficient it is. The following section will describe several compensatory and noncompensatory choice strategies that have found support in the literature.

Compensatory strategies

The trade-offs required of compensatory strategies can be difficult to make (i.e. cognitively demanding) because consumers must assess how high a level on one attribute is required to make up for a poor level on another attribute. Compensatory

strategies that can resolve such trade-offs include weighted additive, equal weight and majority of confirming dimensions.

The *weighted additive* model (Payne et al. 1993) is a cognitively demanding compensatory strategy and forms the basis of many choice models. According to the weighted additive model, the importance of each attribute used in the evaluation of alternatives is determined and a subjective value is placed on each attribute level. The importance of each attribute is multiplied by its associated attribute level value for an alternative. These are then summed to arrive at an overall score, or utility, for the alternative. The process is repeated for all alternatives and the alternative with the highest utility is chosen. A weighted additive model would predict choice of alternative A in Table 2-1. Multiplying each attribute level by attribute importance yields the highest score for alternative A (4 * 10 + 3 * 8 + 2 * 2 + 1 * 1 = 69).

TABLE 2-1:
Examples of choice strategies

Attribute	Attribute importance	Level on attribute		
		Alternative A	Alternative B	Alternative C
A1	*4*	10	1	7
A2	*3*	8	8	5
A3	*2*	2	8	8
A4	*1*	1	5	4
CHOICE MODELS				
Weighted additive score		***69***	*49*	*63*
Equal weight score		*21*	*22*	***24***
Majority of confirming dimensions choice			√	

NOTE.–Alternatives in this example vary on 4 attributes, A1 – A4. A scale of 1 – 4 is used to rate attribute importance, with 4 being most important and 1 being least important. Each attribute is then given a favorability level on each attribute, such that 10 is the highest level (favorable) and 1 is the lowest level (unfavorable). Choice model scores in **bold** text indicate which alternative is predicted to be chosen by that model. A weighted additive model would lead to choice of alternative A. A consumer using an equal weight decision strategy would choose alternative C. A consumer using a majority of confirming decision strategy would choose alternative B.

An *equal weight* (Beckwith and Lehmann 1973) strategy is a simpler variation of weighted additive that ignores the importance of each attribute. Instead, values for all attributes for an alternative are summed and the alternative with the highest utility is chosen. An equal weight strategy would predict choice of alternative C in Table 2-1, since this alternative has the highest score when summing attribute values for alternatives (7 + 5 + 8 + 4 = 24).

The *majority of confirming dimensions* (Dosher and Russo 1976; Russo and Dosher 1983) strategy involves comparing alternatives pairwise on each attribute to determine which alternative is best on the most attributes. The winner is then compared with the next alternative until a choice is determined. When comparing alternatives A and B in Table 2-1, A is best on one attribute (A1), B is best on two attributes (A3 and A4) and the alternatives tie on the remaining attribute (A2). The consumer will reject alternative A and then continue by comparing alternatives B and C. In comparing B and C, B is best on two attributes (A2 and A4), C is best on one attribute (A1) and the alternatives tie on one attribute (A3). Since it is best on more attributes, alternative B should then be chosen by a consumer using a majority of confirming dimensions choice strategy.

Noncompensatory strategies

Noncompensatory strategies simplify choice through a selective evaluation of information (Bettman et al. 1998; Payne et al. 1993). Not all attributes and/or alternatives are examined, thus saving time and effort. Lexicographic, satisficing and elimination by aspects are three examples of noncompensatory strategies that simplify decision-making.

A *lexicographic strategy* (Fishburn 1974) is a simple heuristic in which a consumer picks the alternative that is best on the most important attribute. If there is a tie on attributes, the consumer would move on to the next most important attribute. The lexicographic strategy is cognitively non-demanding relative to compensatory strategies, such as the weighted additive strategy described above. A consumer using

a lexicographic strategy would choose alternative A in Table 2-1, because it has the highest level (10) on the most important attribute (A1).

Satisficing (Simon 1955) is a choice strategy in which an alternative is reviewed to see if it is at or above desired levels on all important attributes. If these criteria are met, it is selected. If the alternative fails to meet at least one of the desired attribute levels, the respondent moves on to the next alternative. If no alternatives are selected, the process is repeated with less strict cutoff levels until a choice is made. The examination order of the alternatives could be critical for determining the outcome of such a strategy. Imagine consumers who only find attributes A1 and A2 to be important in Table 2.1. Furthermore, say that they require at least a level of 7 on attribute A1 and a level of 5 on attribute A2. If they use a satisficing strategy and begin with consideration of alternative A, A will be chosen and no more evaluation will be done. In this case, alternative A has met the required level criteria on the two important attributes. If alternative B was considered first, it would be rejected. If C was considered first, it would be chosen because, like A, alternative C meets the required level criteria on the two important attributes.

Elimination by Aspects, or *EBA* (Tversky 1972), is a noncompensatory strategy that builds on both the lexicographic and satisficing strategies: EBA assumes attribute-based information search, like a lexicographic strategy, and requires that an alternative meet some minimum criteria on all important attributes, like a satisficing strategy. According to EBA, consumers first search for all alternatives that meet some minimum criterion on an important attribute. Alternatives that don't meet this criterion are excluded from processing and are no longer considered for choice. Consumers then move on to the next attribute, and so on until they make a choice. With regard to Table 2-1, a consumer using a noncompensatory strategy, such as EBA, might first decide to only consider alternatives that have a level of 7 or higher on attribute A1. Alternative B would be excluded from further consideration. A2 might be the next attribute used in this process. The consumer may only require a level of 5 on attribute A2. In this case, both alternatives A and C would still be considered. If the consumer then requires at least a level of 5 on attribute A3, they will choose alternative C.

2.1.2. Attribute screening order in noncompensatory strategies

When not all information is used, the order of information processing can influence the choice of an alternative (Bettman and Kakkar 1977; Bettman et al. 1998; Mackenzie 1986). Given that all information is attended, different choice strategies should often lead to the same conclusion. However, if only part of the information is processed the conclusion or choice might differ depending on which choice strategy is used. For instance, when using an EBA strategy an alternative that is unfavorable on the first screened attribute will not be considered by a consumer at a later stage regardless of its favorability on other attributes. It is important, then, to identify which attribute is processed first, second and so on. The order in which attributes are reviewed may be determined by prior preferences, set configuration or a combination of both.[2] These factors are presented below.

Prior preferences as determinants of attribute ordering

Consumers often have pre-existing preferences that favor some alternatives and/or attributes (Bettman et al. 1998) that can be used to make a choice. These existing preferences may determine the order in which attributes are reviewed in noncompensatory strategies. For instance, a safety-conscious car-buyer may decide that the first hurdle a considered car must meet is an above average crash-test rating. Conversely, a buyer of an expensive watch may decide that brand is the most important attribute and start the decision process by only considering luxury brand watches.

Set configurations as determinants of attribute ordering

Preferences for alternatives and/or attributes can also be created in purchase settings, rather than existing prior to making a purchase (Bodapati and Drolet 2005; Huber et

[2] Aside from satisficing, most noncompensatory strategies tend to involve attribute-wise processing to screen alternatives before making a choice (Payne et al. 1993). When consumers conduct an *alternative-wise* evaluation, they holistically evaluate a single alternative before moving on to the evaluation of the next alternative. An *attribute-wise* evaluation, on the other hand, involves evaluating the favorability of each considered alternative on an attribute before moving on to the next attribute to be evaluated. Given that noncompensatory strategies tend to be characterized by attribute-wise processing, this thesis will focus on attribute-wise, rather than alternative-wise processing.

al. 1982; Simonson 1989). When a consumer extensively uses information from the choice environment to evaluate alternatives, preferences are likely to become subject to the influence of choice set configuration (Shocker et al. 1991). The presentation of alternatives, for instance, can make particular attributes salient and can influence attribute importance. For example, product displays can influence the perceived importance of attributes used to categorize alternatives (Areni, Duhan, and Kiecker 1999; Simonson, Nowlis, and Lemon 1993). In a study by Areni et al. (1999), a prominent in-store display highlighted wines from an *unfavorable* region. The presence of this display decreased sales of wines from unfavorable regions and increased sales of wines from more favorable regions as compared to when wines were displayed only on store shelves by grape variety (Areni et al. 1999). The authors argued that the presence of the region display increased salience of the organizing attribute (region); thus highlighting its usefulness in deciding among alternatives.

Prior preference and set configurations in determining attribute order

The above discussion distinguishes between prior preferences and information obtained from the configuration of a choice set; however, most decisions are likely to use a combination of the two. For instance, prior preferences may be used to determine the order for processing attribute information in screening alternatives, yet the cut-off levels might be inferred from the choice environment. In other situations, consumers might start with an attribute-wise screening of alternatives based on prior preferences before turning to cues from the choice environment to make a choice. Consumers purchasing a television, for example, might first reject unfavorable brands and then reject alternatives that exceed their budget. At this point, they may no longer have strong preferences for any other aspects and the third screening criteria may be difficult to determine. Perhaps they notice the presence of many high-definition televisions on display in the store. This might suggest that this feature is important and prompt consumers to use the high-definition feature as their third screening criteria. Consumers would have started processing using pre-existing preferences before allowing the configuration of the set to influence their choice.

2.2. Set configuration effects

In decisions that are at least partially based on cues from the choice environment, the configuration of a choice set can influence which alternative is chosen (Hamilton et al. 2007; Huber et al. 1982; Simonson 1989; Tversky and Russo 1969). These *set configuration effects* can be broadly categorized into those in which the presence of similar alternatives, a unique alternative, or a compromise alternative can influence choice of a target alternative. For instance, an *attraction effect* (Huber et al. 1982; Huber and Puto 1983) takes place when a target alternative achieves increased choice share because of the inclusion of a similar, yet inferior alternative. In contrast, *substitution* (Tversky 1972; Tversky and Russo 1969) occurs when an alternative introduced to a set takes proportionally more share from a more similar alternative than from a less similar alternative. A *compromise effect* (Simonson 1989; Simonson and Tversky 1992) occurs when the inclusion of an extreme alternative to a set increases choice of an alternative that appears to become a compromise option.[3] Bettman et al. (1998) suggest that attraction effects are perceptual in nature, implying that specific elements of set configurations must be salient for these set configuration effects to occur. For instance, consumers need to observe that one alternative is similar and inferior to another alternative for an attraction effect to occur. This logic can also be applied to other set configuration effects where a perceived relationship among alternatives influences choice. For example, a consumer would need to perceive an alternative as being a compromise for a compromise effect to occur. The subsequent sections present set configuration effects that favor choice of similar, compromise and unique alternatives, followed by an examination of the role of salience in these effects.

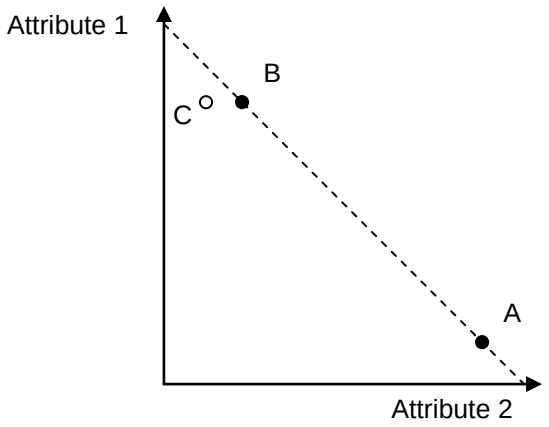
[3] There is a degree of confounding between the naming of effects and the mechanisms theorized to bring them about. Specifically, the names given to specific set configuration effects are often descriptions of the mechanisms that create the effects. Resolving this issue of confounding by developing new name for existing effects is not taken up in this dissertation.

2.2.1. Conditions favoring similar alternatives

Choice of an alternative can be increased through the addition of a similar, yet inferior alternative, referred to as a decoy, to a choice set. This is called an *attraction effect*[4] (Dhar and Simonson 2003; Ha et al. 2009; Heath and Chatterjee 1995; Hedgcock and Rao 2009; Huber et al. 1982; Huber and Puto 1983; Ratneshwar, Shocker, and Stewart 1987; Wedell and Pettibone 1996) and it occurs when a decoy alternative that is directly dominated by one existing alternative, but not the other, is added to a set of two alternatives. An alternative is dominated when it has "at least one feature that is clearly worse than those of a competing alternative and no features that are better" (Pettibone and Wedell 2000, p. 301). The addition of the dominated decoy creates a configuration known as *asymmetric dominance*. The dominated decoy alternative is not likely to be chosen. The presence of the dominated decoy alternative, however, leads to increased choice of the alternative that dominates it. An attraction effect is illustrated in Figure 2-1. In this example, a consumer, when shown only alternatives A and B, is forced to make a difficult trade-off between alternatives that are high on one attribute, but low on the other attribute. The introduction to this choice set of C, which is asymmetrically dominated by B, but not A, will lead to an attraction effect, where B gains in choice share. Alternative B dominates alternative C because B has an advantage over C on at least one attribute and is at least as good as C on all other attributes.

[4] The attraction effect is an outcome of asymmetric dominance. When a decoy is added to a set and is dominated by one alternative, but not the other, this dominance is asymmetric, hence *asymmetric dominance*.

FIGURE 2-1:
Asymmetric Dominance and the Attraction Effect



NOTE.–A consumer may face a difficult decision when deciding between A and B. The introduction of C will lead to an increase in choice share for B.

Several explanations for the attraction effect have been proposed, including value-shift, weight-change and emergent-value models. A *value-shift* model explanation is based on Range-Frequency theory (Parducci 1965).[5] When only alternatives A and B are present in the set shown in Figure 2-1, the target alternative (B) has the least favorable value on attribute 2. Adding a decoy (C) extends the range of values on attribute 2. The decoy (C) becomes the alternative with the least favorable value on attribute 2. The target (B), however, becomes more attractive because it is no longer identified as having the least favorable value on attribute 2. Thus, the target (B) is perceived to have the most favorable value on attribute 1 and is not the least favorable on attribute 2. In contrast, the other non-decoy alternative (A) is perceived to have the most favorable value on attribute 1 and the least favorable value on attribute 2. This makes the target (B) relatively more attractive in the three alternative set than in the two alternative set.

A *weight-change* explanation suggests that adding a decoy increases the number of alternatives sharing the attribute level on which the target is superior (Huber et al.

[5] According to Range-Frequency theory, people subjectively value a stimulus according to its relative ranking among all stimuli on a dimension and its location between the minimum and maximum values on the dimension.

1982). This increase in the proportional weight of alternatives sharing that attribute level is said to make the attribute more salient. Additionally, the target may appear to be more popular because there are more alternatives that share that superior attribute value (Huber et al. 1982). Consumers may infer from the increased proportion of alternatives at that attribute level that others would choose an alternative with that level. As the target dominates the decoys, consumers will tend to make the same decision that they believe others would make and choose the dominating target alternative. In Figure 2-1, adding alternative C to the choice set creates a configuration where the presence of two alternatives (B and C) increases the proportional weight of alternatives that are superior on attribute 1, in relation to the one alternative (A) that is superior on attribute 2. Hence, for an initial situation where one faced a 50/50 trade-off between attribute 1 and attribute 2, the weight is now pushed in favor of attribute 1, making the trade-off simpler.

Emergent-value models propose that the relational comparison between a decoy and its dominating target adds a reason to choose the dominating alternative (Wedell and Pettibone 1996). For instance, a decoy can add value through providing a reason to justify the choice of a target. Consumers desire to be rational and seek out reasons that justify decisions they make to themselves and others (Simonson 1989). Mental conflict over making a hard decision, such as one involving trade-offs, creates psychological discomfort when consumers must justify their decision (Dhar and Simonson 2003). Additionally, consumers want to minimize the potential regret they anticipate from making a poor purchase decision (Simonson 1992; Zeelenberg 1999). Thus, consumers seek out the alternative that is easiest to justify to reduce discomfort and the possibility of regret (Simonson 1989). To satisfy their need for justification, consumers can refer to the configuration of the choice set to argue their choice (Simonson 1989; Simonson and Tversky 1992). In Figure 2-1, alternative B is clearly better than alternative C, whereas the same cannot be said for alternative A. Hence, B becomes the preferred alternative. Alternatively, the conflict over making a trade-off based choice can be emotional. The concept of emotional trade-off difficulty (Luce, Bettman, and Payne 2001) suggests that making trade-offs can be emotionally taxing. To reduce the negative emotion associated with an emotionally difficult trade-off, consumers can use a combination of problem-focused and emotion-focused coping

strategies (Bettman et al. 1998; Payne et al. 1993). Problem-focused strategies involve direct attempts to make the most accurate choice and require extensive cognitive processing. Emotion-focused coping strategies are attempts to avoid making trade-offs. The introduction of a decoy alternative allows consumers to use emotion-focused coping strategies. They can use the dominance relationship as a simplifying choice heuristic that avoids making a trade-off. Rather than focusing on the trade-off, the consumer chooses the dominating alternative because it is clearly better than the decoy.

Prior research finds support for value-shift and emergent-value explanations of the attraction effect (Hedgcock and Rao 2009; Wedell and Pettibone 1996). To test a value-shift explanation, Pettibone and Wedell (1996) measured attractiveness ratings of each attribute describing an alternative. An observed increase in attractiveness ratings for target alternatives suggested a value-shift. Pettibone and Wedell (1996) then tested an emergent-value explanation by measuring ease of justifiability for the target alternative. Target alternatives were found to be easier to justify in the presence of a decoy. Hedgcock and Rao (2009) also found support for an emergent-value model explanation of attraction effects in a neuroimaging study. Areas of the brain associated with negative emotion were more activated when respondents were shown choice sets requiring attribute trade-offs between two alternatives relative to choice sets that added an asymmetrically dominated decoy. Hedgcock and Rao (2009) argued that the presence of the decoy made the choice simpler through avoiding the need to make a difficult trade-off. In contrast, Pettibone and Wedell (1996) tested and rejected the weight-change explanation by evaluating changes in attribute importance ratings. Observed attribute importance ratings were the reverse of those predicted by a weight-change model. Hence, findings from these studies suggest that value-shift and emergent-value models are more plausible explanations for attraction effects than a weight-change model.

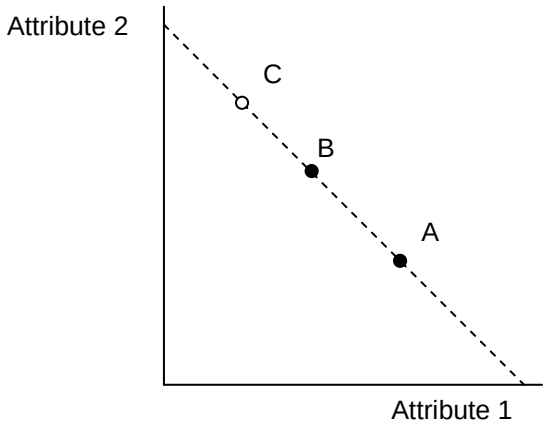
Research by Yoon and Simonson (2008) suggests that set configuration effects differ with regard to how confident consumers are in their decision, depending on whether they realize that context is influencing their choice or not. They find that the presence of asymmetric dominance can increase the perceived attractiveness and choice of the

target without consumers being aware that the set configuration influenced their choice. Consumers may believe that they are picking a more attractive option in choosing an asymmetrically dominating alternative and will be more confident that they have made a good choice (Yoon and Simonson 2008).

2.2.2. Conditions favoring compromise alternatives

Becoming a compromise alternative has been shown to increase choice of an alternative; referred to as a *compromise effect* (Chernev 2004; Dhar, Menon, and Maach 2004; Dhar, Nowlis, and Sherman 2000; Nowlis and Simonson 2000; Sheng et al. 2005; Simonson 1989; Simonson and Tversky 1992; Wernerfelt 1995). Envision a choice set including two alternatives, A and B, which are equally attractive, yet different along two attributes (see Figure 2-2). Both alternatives are considered extreme if one alternative, A, is favorable on attribute 1 and unfavorable on attribute 2, and the second alternative, B, is unfavorable on attribute 1 and favorable on attribute 2. When such a trade-off is required for choice, consumers are uncomfortable with how much value they must give up on one attribute in order to gain a higher value on another attribute (Simonson and Tversky 1992). The inclusion of an additional alternative to the set, C, that is less favorable on attribute 1 and more favorable on attribute 2 than both alternatives transforms alternative B from an extreme to a compromise alternative. Alternative B is no longer most or least favorable on either attribute. Simonson and Tversky (1992) argue that *extremeness aversion* leads to increased choice of the compromise option, B, in a three alternative set (A, B, C) relative to when it is presented in a two alternative set (A, B) as an extreme option. The amount of one attribute that the consumer has to give up (a disadvantage) is weighed more heavily than a corresponding increase on the other attribute (an advantage). Both advantages and disadvantages for extreme options are perceived to be relatively more significant than the relatively smaller advantages and disadvantages of a compromise option. Since the disadvantages of extreme options are larger than the disadvantages for a compromise option, consumers will be inclined to choose the less disadvantageous compromise option. In accordance with an emergent-value model, consumers can justify their choice by saying that they choose an alternative that represented a compromise.

FIGURE 2-2:
Compromise Effect



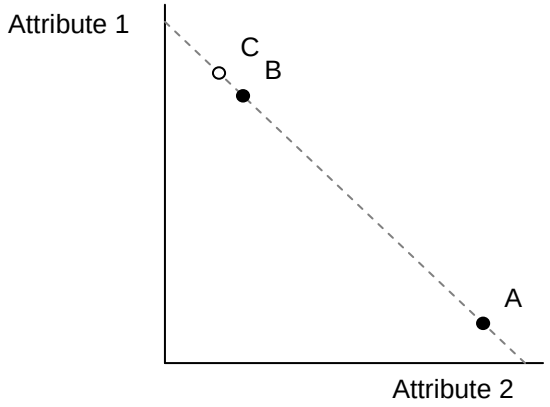
NOTE.–A consumer shown only alternatives A and B is forced to make a difficult trade-off between one alternative, A, that is high on attribute 1, but low on attribute 2 and vice versa for the second alternative, B. Introducing an extreme alternative (C) to the set leads to a compromise effect, wherein choice of alternative B increases.

2.2.3. Conditions favoring unique alternatives

An unique alternative can be described as being "the only alternative with a unique value" (Hamilton et al. 2007, p. 188) on an attribute. Being unique can preserve or increase choice of an alternative, as suggested by substitutability (referred to as the similarity hypothesis by Tversky and Russo 1969) and perceptual focus effects (Hamilton et al. 2007). Substitutability suggests that the introduction of an alternative to a set will lead to the new alternative taking proportionally more share from a more similar existing alternative than from a less similar existing alternative. Tversky (1972) developed the Elimination by Aspects (EBA) model in response to the failure of choice models at the time to account for choice between alternatives in sets containing similar, or substitute, alternatives. A central component of EBA is the *similarity hypothesis* (Tversky and Russo 1969), later referred to as *substitutability* (Huber and Puto 1983). As shown in Figure 2-3, alternative B and A are dissimilar alternatives. B is high on attribute 1 and low on attribute 2 whereas A is low on attribute 1 and high on attribute 2. Assume that both alternatives start with 50% choice share. According to the similarity hypothesis the introduction of alternative C, an option that is similar to alternative B, should steal choice share from B, but not A.

Hence, the distribution of choice share among the alternatives might be 25% each for B and C and 50% for A.

FIGURE 2-3:
Substitutability

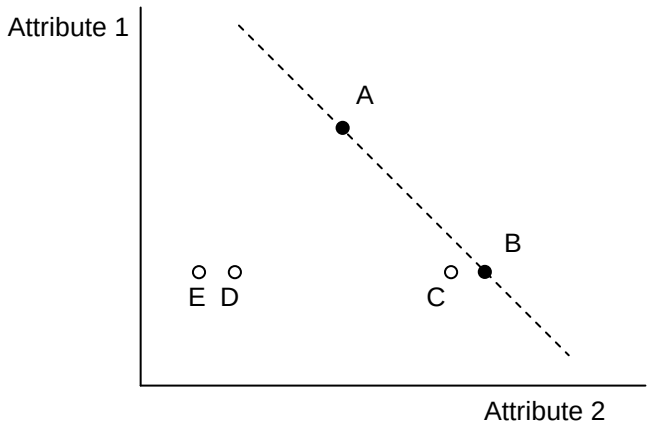


NOTE.–The introduction of alternative C to a set including A and B should lead to a reduction in choice of B, yet not affect choice of A.

A question was raised in the introduction to this thesis regarding the likelihood of a recent homeowner choosing a washer with steam function (a steam washer). Is a homeowner more likely to choose a specific washer when it is the only steam washer or when there are several steam washers? Substitutability suggests that the inclusion of additional steam washers should steal share from the original steam washer, but not from less similar alternatives without this steam function. Hence, being one of several steam washers should result in lower choice share for an alternative as compared to that alternative being a unique steam washer alternative. Substitution implies that choice of a unique alternative may be unaffected by the addition of alternatives to a set, whereas similar alternatives are likely to lose choice share. In contrast, at least one set configuration has been found to increase choice of a unique alternative when alternatives are added to a set. Making an alternative perceptually unique, compared to competing alternatives that are similar to each other, can lead to an increase in choice of the unique alternative relative to when it is not unique. Hamilton et al.

(2007) named this a *perceptual focus* effect.[6] In Figure 2-4, an attraction affect occurs when alternative B dominates alternative C in the set (A, B, C). Consider a condition in which alternatives D and E are added to the set (A, B, C, D, E). Alternatives D and E are dominated by both A and B. At the same time, D and E share a common value with B and C on the attribute they are favorable on (attribute 1). The addition of alternatives D and E causes a reversal of the attraction effect[7] and alternative A gains in choice share; a perceptual focus effect. In this case, alternative A can be considered to be unique, as it has unique values on both attributes. Alternatives B, C, D and E, on the other hand, have different values on attribute 2, but share the same value on attribute 1.

FIGURE 2-4:
Perceptual Focus



NOTE.–The original choice set includes alternatives A and B only. The introduction of C only to this set will lead to an increase in choice share for B (Attraction Effect). However, the addition of C, D and E to the set will lead to an increase in choice share for A, relative to B (Perceptual Focus effect).

Hamilton et al. (2007) argued that perceptual focus effects occur because salience from being unique focuses attention on an unique alternative, leading to increased

[6] A distinction should be made between a perceptual focus effect and substitution. Perceptual focus effects entail an increase in choice of a unique alternative when similar alternatives to the competing alternatives are added to a choice set. Substitution, on the other hand, suggests that a unique alternative maintains, but does not gain, choice share when similar alternatives to the competing alternatives are added to a set.

[7] Asking respondents to justify their choice reversed the effect, leading to a return of the attraction effect.

attractiveness and choice of the alternative. This explanation is largely based on a focus of comparison study by Dhar and Simonson (1992). Respondents in that study were presented several product categories including two alternatives each and asked to indicate how much they preferred a randomly assigned target alternative (i.e. the focal alternative) to the other alternative. For example, some respondents were asked "You have applied to the MBA programs at both the Harvard Business School and the Stanford Business School… How much more or less do you prefer to do an MBA at the Harvard Business School? (Dhar and Simonson 1992, p. 432)". In this example, Harvard Business School was the focal alternative. Focal alternatives were evaluated more favorably and chosen more often than non-focal alternatives. Dhar and Simonson (1992) argued that there were two potential complementary reasons for this effect; increased attention and loss aversion. First, alternatives generally have more positive features than negative. Focusing attention on one alternative will increase its perceived attractiveness as these favorable features are processed. Second, when a focal alternative is the reference point, gains and losses will be framed in relation to the focal alternative. As such, the losses associated with not choosing the focal alternative will outweigh the gains from choosing the competing alternative. This makes the focal alternative appear to be more attractive. The role of salience in perceptual focus and attraction effects is discussed in more depth in the following section.

2.2.4. The role of salience in set configuration effects

Bettman et al. (1998) imply that salience of specific relationships between alternatives in a set is a necessary condition for set configuration effects. Salience has also been offered as part of the explanatory mechanism for set configuration effects, as suggested by the above discussion of perceptual focus effects. Given this importance

of salience, this section will expand on the role of salience in set configuration effects.[8]

Salience has been shown to influence decision-making and choice (Alba and Chattopadhyay 1985, 1986; Hunt 1995; Janiszewski 1998; Kardes et al. 1993; Nedungadi 1990; Pieters, Wedel, and Jie 2007; Posavac, Sanbonmatsu, and Fazio 1997; Schindler and Berbaum 1983; Van der Lans, Pieters, and Wedel 2008). One of the ways in which salience can affect choice is through influencing the order and amount of information processed about a stimulus (Jarvenpaa 1990; Kardes et al. 2002; Sanbonmatsu, Shavitt, and Gibson 1994). For instance, increased salience of an alternative can lead to selective consideration of, or giving more attention to, the salient alternative relative to non-salient alternatives (Dhar and Simonson 1992; Fazio, Powell, and Williams 1989; Jarvenpaa 1990; Meyvis and Janiszewski 2002; Posavac et al. 2005; Taylor et al. 1979). Attending more to information about a salient alternative tends to polarize attitudes (i.e. attitudes become more extreme) about the salient alternative (Bettman and Sujan 1987; Mackenzie 1986; McArthur and Solomon 1978; Posavac, Sanbonmatsu, and Ho 2002; Sadler and Tesser 1973; Taylor and Fiske 1975; Taylor, Fiske, and Leonard 1978; Tesser and Conlee 1975). Attitude polarization has been demonstrated with stimuli that are salient because they are unique (McArthur and Solomon 1978; Taylor et al. 1978). For instance, a favorably (unfavorably) evaluated person was viewed as more favorable (unfavorable) when the person was salient due to being the only member of a gender or race in a group rather than being similar to others (Taylor et al. 1978). Hence, being unique can make an alternative salient and, consequently, more favorable. Findings from Feature-Integration theory further support this notion of uniqueness causing an alternative to be salient (Treisman and Souther 1985; Treisman and Gelade 1980). According to Feature-Integration theory (Treisman and Souther 1985; Treisman and Gelade 1980), visual information is processed in two successive stages. The first stage entails parallel processing of elementary features, such as lines and colors. The second

[8] This discussion will be limited to set configuration effects brought about by the presence of unique or similar alternatives, but not compromise alternatives. As mentioned in the introduction to this thesis, research by Kivetz et al. (2004) found support for compromise effects in a complex choice task. Because the compromise effect has already been explored in a complex choice task, this thesis focuses on the influence of set configurations containing unique alternatives (e.g. perceptual focus effects) or similar alternatives (e.g. attraction effects) on choice.

conjunctive stage involves serial processing of conjunctions of features to create useful information, such as combining the features red and line to note the presence of a red line. A robust finding from this research is that a target alternative with a unique feature will pop-out and be easy to find in a display when non-target alternatives are similar to each other (Duncan and Humphreys 1992; Duncan and Humphreys 1989; Treisman and Gelade 1980; Van der Lans et al. 2008). As non-target heterogeneity increases, however, the unique target alternative may no longer pop-out (Duncan and Humphreys 1992; Van der Lans et al. 2008; Wolfe and Horowitz 2004).

Reduced salience of a unique alternative in a choice environment characterized by competitor heterogeneity is based on salience equating to being noticeable. However, being noticeable is not the only characterization of salience to have been identified. Tversky (1977) proposed to two aspects of salience; *intensive* and *diagnostic*. The first component, intensiveness, refers to how noticeable a feature is, such as a bright light in a dark room or the size of the headline for this section relative to the text you're reading now. Diagnosticity refers to the ability of a feature to help distinguish between objects. An attribute that is shared by all alternatives does not discriminate and is not diagnostic, whereas an attribute that can highlight differences between alternatives is considered diagnostic. I will now make a case for how these two components of salience may work in set configuration effects caused by uniqueness and asymmetric dominance set configurations. The defining characteristics of relationships leading to set configuration effects should be intensive for the effects to occur. For instance, for a uniqueness set configuration to influence choice, a consumer needs to observe that one alternative is unique on an important attribute compared with the other alternatives. Hence, being unique on an important attribute needs to stand out. The relationship between alternatives in a set may also be diagnostic. For example, being unique on an important attribute indicates that the alternative is different from the others; thus providing a means to distinguish between the alternatives. If asymmetric dominance is to influence choice, a consumer should notice (intensive) the increased proportional weight, or number, of alternatives sharing the same favorable level on an important attribute and that one of these alternatives dominates the others. Asymmetric dominance should also be diagnostic because the dominance relationship provides a means to distinguish between a good

(the dominating alternative) and poor alternative(s) (the decoy). A consumer can then justify choosing the dominating alternative because it is more attractive than another similar alternative(s). Now that set configuration effects and the essential role of salience have been addressed, I will focus on how task complexity may influence these effects.

2.3. Task complexity and set configuration effects

Task complexity has been extensively researched in the decision-making and choice literature (Dijksterhuis 2004; Johnson and Payne 1985; Klemz and Gruca 2003; Newell et al. 2009; Olshavsky 1979; Payne 1976; Payne et al. 2008; Swait and Adamowicz 2001; Timmermans 1993; Treisman and Gelade 1980), yet what constitutes a complex task is not entirely clear. Task complexity has been identified as "the *number of alternatives* and/or the *number of attributes* on which the alternatives are evaluated [italics in original]" (Timmermans 1993, p. 95). Research by Payne (1976) suggests that as few as six alternatives varying on four attributes makes a choice task complex, whereas two alternatives that also vary on four attributes can be considered a simple choice task. Hence, the distinction between what could be considered a complex versus a simple task seems to have been between two and six alternatives and four attributes or less in Payne's (1976) study. An alternative way of viewing this is that the number of pieces of information in Payne's (1976) complex choice task was at least twenty-four (six alternatives X four attributes), whereas the number of information pieces in the simple choice task was eight (two alternatives X four attributes).

A key finding in the literature is that task complexity can influence selection of choice strategies (Heitmann, Lehmann, and Herrmann 2007; Olshavsky 1979; Payne 1976; Timmermans 1993). For instance, consumers tend to review less information and use attribute-based noncompensatory choice strategies when choice tasks become more complex (Payne 1976; Payne et al. 1993). Alternatives that are superior on the most prominent attribute become more favorable in such cases (Bettman et al. 1998; Payne et al. 1996). However, more than one choice strategy may be used in making a choice. Research using think aloud protocols that trace subjects' thought processes suggests

that subjects first use simple heuristics to "reduce cognitive strain" in complex tasks and then switch to more cognitively demanding strategies to make their choice (Payne 1976, p. 384). For instance, when choosing among many alternatives consumers can start by screening alternatives using a simplifying heuristic, such as EBA, before switching to a compensatory strategy to make a choice. On the other hand, subjects choosing between two alternatives were more likely to use only compensatory decision strategies. In a separate study, respondents also used compensatory choice strategies when there were few alternatives to choose from and switched to noncompensatory strategies, followed by a compensatory choice, when there were many alternatives to choose from (Timmermans 1993). The role of the number of attributes in task complexity has also been explored (Payne 1976), but appears to have a weaker effect with regard to switching choice strategies. Thus, Payne (1976) argued that the number of alternatives was the dominant factor in defining task complexity, even though task complexity has traditionally been defined as a function of both the number of alternatives and attributes.

Bettman and colleagues (1998) have argued that increasing the complexity of a task should weaken the ability of asymmetric dominance to influence choice. In simple choice tasks involving three alternatives described by two attributes, it may be relatively easy for consumers to notice an asymmetric dominance relationship. As addressed in the sections above, prior research shows that consumers faced with such simple tasks can be influenced by the configuration of alternatives in a set (Hamilton et al. 2007; Huber et al. 1982; Simonson 1989). However, consumers regularly make choices among many alternatives described on many attributes (i.e. complex choice tasks). Bettman et al. (1998) suggest that dominance relationships should be more difficult to detect (i.e. are less salient) in such complex choice tasks because attraction effects…

> *…depend heavily on the notion that asymmetric dominance relationships are generally quite simple and perceptual in nature and that the dominance relations are very easy to assess. We also argue that the very salience of such relations is part of what makes them good reasons [to justify choice of an alternative]. However, for problems of any complexity, such relationships may be more*

> *difficult to assess. For example, as the number of attributes increases, the number of required pairwise attribute comparisons increases, and the consumer may not be able to make the comparisons in a simple, perceptual fashion (i.e., it may not be easy to take in the options "at a glance"). In these more complex situations, the amount of effort expended or the goodness of the outcome may be the easiest aspects of the choice for the individual or observer to assess, unlike the obviousness and salience of relational properties in simpler situations. (Bettman et al. 1998, p. 198)*

Implicit in this line of reasoning is that consumers are evaluating all information (cf. Bettman et al. 1998, p. 198 ("as the number of attributes increases, the number of required pairwise attribute comparisons increases")). Assuming salience of relationships between alternatives is necessary for set configuration effects, their argument that set configuration effects will be weakened by increasing task complexity makes sense and should also apply to other set configuration effects. In contrast, if consumers use a non-compensatory strategy, such as EBA, to reduce information processing requirements, relationships between alternatives that are based on the initial attributes used in processing could be noticed. In these cases, relationships between alternatives might be salient even though the complexity of the task has increased. For example, consumers should be able to detect an asymmetric dominance relationship among washing machines with a steam cleaning function if they first eliminate from consideration all alternatives without steam cleaning and then evaluate on price (assuming one alternative is more favorably priced than the other(s)). However, the notion that asymmetric dominance, and potentially other set configurations, will or will not influence choice in complex choice tasks has not yet been generally explored by empirical research. The only research I am aware of that explicitly examines set configuration effects in complex choice tasks is by Kivetz et al. (2004).[9,10] Their findings suggest that compromise effects occur in more complex

[9] One could argue that perceptual focus effects (i.e. increased choice of a unique alternative) occur in complex choice tasks because five alternatives were used to create the set configurations leading to perceptual focus effects in the Hamilton et al. (2007) study. However, those five alternatives varied on two attributes only. Hence, Hamilton et al.'s (2007) study used ten pieces of information in set configurations (five alternatives X two attributes). This appears to be closer to a simple task, identified as eight pieces of information in Payne's (1976) study, than a complex task.

choice tasks than typically researched. In their study, respondents were shown sets of five alternatives that varied on four attributes. Comparisons between set configurations showed a general tendency for respondents to avoid extreme alternatives and choose one of the three compromise alternatives in the set. An implication from their study is that being one of a set of compromise alternatives increases choice of an alternative relative to when it is an extreme alternative.

Although compromise effects have been examined in complex choice tasks, there is still an open question regarding whether other set configurations, such as the presence of a unique alternative or asymmetric dominance, will also lead to set configuration effects in complex choice tasks. Some researchers have explicitly called for more research on this topic. Specifically, Bettman et al. (1998) concluded that a lack of studies regarding the influence of task complexity on set configuration effects represents "one large gap in the literature" (Bettman et al. 1998, p. 209). This dissertation seeks to reduce this gap through exploring if and how set configuration effects occur in more complex choice tasks than previously studied. Given this focus, the next section of this chapter presents hypotheses related to set configuration effects in complex choice tasks. I will argue in these hypotheses that relationships among alternatives will be salient and lead to set configuration effects in more complex choice tasks than typically researched. Specifically, increased choice of a *unique* alternative in a set, and a dominating alternative in sets containing *asymmetric dominance* are discussed.[11] As mentioned in the sections regarding set configuration effects earlier in this dissertation, the need for justification plays a prominent role in research regarding unique alternative and asymmetric dominance set configurations. Hence, hypotheses are also developed regarding the influence of need for justification on these set configuration effects. The final section of this chapter discusses instances in which set configurations may influence choice even after prior preferences determine consumers' consideration sets.

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[10] Research conducted by Lehmann and Pan (1994) also examined set configuration effects in complex choice tasks. However, the focus of their study was consideration and they did not include choice as a dependent variable. Hence, their study does not provide findings related to choice.

[11] No hypothesis is developed for a compromise effect in a complex choice task, as this was addressed in the Kivetz et al. (2004) study mentioned above.

2.4. Hypotheses

Consumers may have strong preferences that favor specific attributes and, accordingly, alternatives that are more favorable on those attributes (Malaviya and Sivakumar 1998; Sheng et al. 2005). These people are likely to screen alternatives on important attributes and choose according to their preferences (Payne 1976). Hence, set configurations are less likely to influence their choices. In contrast, consumers without strong attribute preferences may seek information from the set to help determine the importance and order of attributes to use in screening alternatives and which attributes to rely on in making a choice. These consumers will often find that they must make a trade-off of one important attribute(s) for another to make a choice, such as better fuel efficiency versus higher horsepower for a car. Trade-offs are uncomfortable because they call attention to losses (Bettman et al. 1998; Luce et al. 2001; Tversky and Shafir 1992). In response to this discomfort, consumers often use attribute-based heuristics to reduce the number of trade-offs required and simplify decisions (Bettman et al. 1998; Payne et al. 1993; Payne et al. 1996). It is among these consumers that set configurations are more likely to influence choices. Salience of specific attributes and/or comparisons among attributes may provide set configuration-based cues to help determine the screening order and choice for these consumers. I will argue in the following sections for two ways in which set configurations can increase choice of a target alternative through making the target salient in complex choice tasks. Uniqueness refers to a set configuration in which a unique alternative should be chosen more often than suggested by respondents' preferences. Asymmetric dominance refers to a set configuration in which an asymmetrically dominating alternative is expected to be chosen more often relative to when the alternative does not dominate another alternative(s). The following sections present hypotheses regarding the influence of these two set configurations, as well as a need for justification, on choice in more complex choice tasks than typically researched.

2.4.1. Uniqueness in complex choice tasks

One potential heuristic that can be used to simplify choice is to choose a unique alternative. As discussed earlier, a salient alternative may receive more attention than other alternatives (Meyvis and Janiszewski 2002; Posavac et al. 2002; Taylor et al. 1979). This increase in attention can lead to polarization of attitudes (Mackenzie 1986; McArthur and Solomon 1978; Posavac et al. 2002; Sadler and Tesser 1973; Tesser and Conlee 1975), making a favorably evaluated salient alternative even more favorable and likely to be chosen. Polarization of attitudes for salient alternatives has been found to be moderated by task complexity. The second experiment in a study by Sanbonmatsu et al. (1994) tested attitude polarization in a consumer products setting (apartments), with alternatives described primarily by eight descriptive statements per alternative. Salience was manipulated by asking respondents to focus on one of the alternatives using the following text: "In particular, we would like you to pay attention to the statements about [name of salient target]. Please give special attention to the description of [name of salient target] (Sanbonmatsu et al. 1994, p. 1023)." The authors of that study found that attitudes were more polarized for salient alternatives relative to non-salient alternatives when respondents were presented with more complex tasks relative (four housing alternatives) to simpler tasks (two housing alternatives). Hence, a favorably evaluated salient alternative was perceived to be even more favorable in a more complex choice task relative to a simpler task. The explanation for this effect offered by Sanbonmatsu et al. (1994) is based on the amount of information consumers process in a decision. They argued that consumers often do not evaluate all information in a decision, leading to differing levels of information processed for each alternative. In such cases, some consumers learn more about salient alternatives and make inferences about non-salient alternatives. When salient alternatives are extreme on dimensions being evaluated, these consumers assess the salient alternatives as being extreme. In contrast, these consumers tend to infer middling values for the information they don't process about non-salient alternatives, as they are uncertain about their impressions of these non-salient alternatives. Furthermore because being unique can make an alternative salient (McArthur and Solomon 1978; Taylor et al. 1978), a favorably evaluated unique alternative should be perceived to be even more favorable in a more complex choice

task relative to a simpler task. This influence of uniqueness in a complex choice task would require that the uniqueness of an alternative be salient enough to lead to increased attention and ensuing attitude polarization. However, increasing task complexity has been found to reduce the salience of a unique alternative among heterogeneous competitor alternatives (Duncan and Humphreys 1992; Van der Lans et al. 2008; Wolfe and Horowitz 2004). If the uniqueness of an alternative is not noticed, that alternative may not receive additional attention. Attitudes toward the unique alternative would not become more favorable and the alternative would not be more likely to be chosen. Hence, it appears that a unique alternative may not be salient enough to influence attitudes and choice in complex choice tasks. However, I will now argue that a unique alternative can be salient in complex choice tasks; leading to increased choice of the alternative.

As discussed earlier, consumers tend to use noncompensatory processing to screen alternatives before switching to a compensatory strategy to make a choice (Payne 1976). In screening on an attribute, the number of information pieces being processed concurrently should not exceed the number of alternatives. For example, a consumer needs to process a maximum of eight pieces of information if eight alternatives are being screened on an attribute. Because of the relatively few pieces of information being processed, a consumer should be able to detect the uniqueness of an alternative based on that attribute. In cases where that attribute is important to the decision, the consumer may process the attribute early in screening and the uniqueness of an alternative on the attribute should be salient. In cases where the alternative is unique on an attribute not used in screening it may still be possible to detect that it is unique, as I will now discuss. In prior set configuration effects research, sets have primarily been constrained to relatively simple choices tasks including two alternatives (Ha et al. 2009) that are joined by a third alternative (Chernev 2005; Hedgcock and Rao 2009; Huber et al. 1982; Pettibone and Wedell 2000; Sheng et al. 2005; Simonson 1989; Yoon and Simonson 2008). The small number of presented alternatives implies that consideration sets were essentially created for respondents. Relationships among alternatives should have been easy to assess, as suggested by Bettman et al. (1998). In complex choice tasks, however, consumers are likely to create consideration sets to reduce the information processing requirements of a choice (Payne 1976). Consumers

can then compare considered alternatives and make their choice. Because of the smaller number of alternatives included in these consideration sets, it should also be easy to assess relationships among alternatives as in previous set configuration effects research. For instance, it is conceivable that a unique alternative might not be perceived as being unique during screening, yet be included in a consideration set for some other reason. Once the unique alternative is included in consideration it should be easy to detect its uniqueness as consumers compare the alternatives. In either case (i.e. noticed in screening or included in consideration for some other reason), increased attention should then be paid to the unique alternative because it is salient and lead to attitude polarization and increased favorability of the unique alternative. Being evaluated more favorably suggests that the unique alternative is more attractive than a consumer's prior preferences suggest it should be. That is, each alternative in a set has a utility that is independent of comparisons with other alternatives or other contextual factors (Bettman et al. 1998). In sets where alternatives are equal in utility, this suggests a proportional model in which alternatives achieve equal share (i.e. there is no rational reason to prefer one alternative over the others). However, attitude polarization suggests that giving more attention to a salient alternative can increase the attractiveness of that alternative. Accordingly, a unique alternative should be more attractive than its utility based on prior preferences would suggest. Hence,…

H_1: being unique will lead to increased choice of an alternative in a complex choice task versus choice suggested by its utility

2.4.2. Asymmetric dominance in complex choice tasks

A second potential heuristic to simplify decisions is to rely on asymmetric dominance as a cue for choice. A typical asymmetric dominance set configuration includes a target and decoy that share a high level (they are similar) on an important attribute (Heath and Chatterjee 1995; Hedgcock and Rao 2009; Huber et al. 1982; Simonson 1989). The target dominates the decoy, yet both the target and decoy are different from a competitor(s). Assuming that the dominating target alternative is equal in utility to all non-decoy competitor alternatives in a set configuration, there should be no rational reason for the target to be chosen more often than suggested by a

proportional model (equal share) including non-decoy alternatives. Despite this expectation of proportionality, attraction effects have often been observed (Busemeyer et al. 2007; Heath and Chatterjee 1995; Hedgcock and Rao 2009; Huber et al. 1982; Huber and Puto 1983; Simonson 1989; Simonson and Tversky 1992). Bettman et al. (1998) suggest that an asymmetric dominance relationship needs to be salient for attraction effects to occur and that asymmetric dominance should be more difficult to detect (less salient) as the number of alternatives and attributes increases (i.e. increased task complexity). Given that the relationship is not noticeable, asymmetric dominance should not result in an attraction effect. Hence, Bettman et al. (1998) have suggested that task complexity reduces the potential for attraction effects. Accepting that asymmetric dominance must be salient to cause to an attraction effect, I will now argue that an asymmetric dominance relationship can be salient in a complex choice task, leading to increased choice of the dominating target alternative.

Huber et al. (1982) suggested a weight-change as a possible explanation for attraction effects. The idea was that adding decoys to a set increases the number of alternatives that share the attribute level on which the target is superior and that the attribute should become more salient because of the increased proportional weight of alternatives sharing that attribute level. The weight-change model was tested and rejected as an explanation for attraction effects in one study by Wedell and Pettibone (1996). However, a weight-change explanation may explain why a dominance relationship can be salient in a complex choice task, even if it doesn't explain choice of the target. In processing information about a choice, consumers may become aware of several alternatives that are similar on an attribute (i.e. target and decoy alternatives); hence making the attribute salient. These consumers may realize that screening on this attribute would allow them to restrict their consideration sets to a subset including the target and decoy alternatives. This would reduce discomfort because of the considerably smaller number of trade-offs they would have to make compared with evaluating all alternatives. In considering the target and decoy alternatives, the asymmetric dominance relationship should stand out; leading to the discovery of a good alternative (i.e. the dominating target alternative). The consumer can cite the dominance relationship as a justification for choosing the dominating target alternative, thus increasing choice likelihood of the target. Hence,…

H_2: the presence of asymmetric dominance in a set will lead to increased choice of the dominating target alternative in a complex task versus choice suggested by its utility

A categorization of the set configurations in the hypotheses

The set configurations discussed in the sections above for hypotheses H_1 and H_2 can be summarized by the relationships among the target alternatives (see Table 2-2). These set configurations presume the target alternative(s) is at the favorable end on an important attribute and that competitor alternatives are ranked less favorably on this important attribute. The important attribute will be referred to as the target attribute to simplify the following discussion.

TABLE 2-2:
Categorization of choice set configurations

	Choice set configuration	
	UNIQUENESS	**ASYMMETRIC DOMINANCE**
Number of alternatives sharing a high level on an important (target) attribute	*One (Unique)*	*Several (Shared)*
Relationship among alternatives sharing a high level on an important (target) attribute	*No shared alternatives*	*Dominance*

Uniqueness assumes that only one alternative is at the favorable end on the target attribute, whereas asymmetric dominance configurations assume more than one alternative is at the favorable end on the target attribute. A further distinction is the relationship between alternatives sharing a high level (favorable end) on the target attribute. Uniqueness implies that the unique alternative does not share a high level on the target attribute with any other alternatives, whereas in an asymmetric dominance configuration at least two alternatives share a high level on the target attribute, yet one of these alternatives (target) dominates the other alternative(s) (decoys).

2.4.3. Need for justification in complex choice tasks

Hamilton et al. (2007) argued that increased choice of a unique alternative (i.e. perceptual focus effects) was due to more intuitive processing than analytic processing. Because asking consumers to justify their decisions is known to promote the use of analytic processing (Sloman 1996), Hamilton et al. (2007) tested analytic versus intuitive processing as an explanation for increased choice of a unique alternative by manipulating a need for justification. Respondents in need for justification conditions were asked to provide rationale for their decision, whereas respondents in no need for justification conditions were not asked. Requiring respondents to justify their decisions was expected to increase analytic processing and decrease choice of a unique alternative. Attraction effects, on the other hand, have been found to be strengthened by a need for justification (Simonson 1989; Simonson and Tversky 1992). Therefore, Hamilton et al. (2007) believed that attraction effects would be more prevalent when justification was required than not. In their research, they found that a need for justification led to increased choice of a dominating alternative (attraction effects) and decreased choice of a unique alternative (i.e. elimination of perceptual focus effects). The moderating role of need for justification may differ in the current study, however. Hypothesis H_1 suggests that the influence of uniqueness on choice in complex choice tasks will be due to more effortful processing (i.e. higher information processing requirements of comparing attributes) and not intuitive processing as suggested by Hamilton et al. (2007) for simple choice tasks. Because a need for justification is known to promote more effortful processing, the influence of a uniqueness set configuration on choice in complex tasks should be stronger when justification is required than not. Hence,…

H_{3a}: a need for justification will increase choice of a unique alternative relative to no need for justification in complex choice tasks

The influence of an asymmetric dominance set configuration on choice in complex tasks should also be stronger when justification is required than when not required. As just discussed, attraction effects have been associated with more effortful processing in simple choice tasks (Hamilton et al. 2007). There is no reason to believe that

attraction effects should require less effort to observe in more complex tasks. Hence,…

> *H_{3b}: a need for justification will increase choice of an asymmetrically dominating target alternative relative to no need for justification in a complex choice task*

2.4.4. Set configuration effects at a secondary level

As mentioned in the development of hypothesis H_1, prior set configuration effects research has tended to provide consumers with pre-established consideration sets from which to make a choice (Chernev 2005; Hedgcock and Rao 2009; Huber et al. 1982; Pettibone and Wedell 2000; Sheng et al. 2005; Simonson 1989; Yoon and Simonson 2008). As such, relationships among alternatives should have been easy to assess (Bettman et al. 1998). However, complex choice tasks should lead some respondents to first screen out a number of alternatives, before considering a smaller subset of alternatives. Exploring more complex choice tasks than typically researched opens for the possibility that set configuration effects might also be found at these later stages in decision processing (i.e. after screening alternatives). In this section, I will suggest that the configuration of a choice set may also influence choices in complex tasks where pre-existing preferences determine the attributes used to screen alternatives. Because this discussion is exploratory, no specific hypotheses are developed.

Primary and secondary level effects

Some respondents will have pre-existing preferences that favor specific features and/or attribute levels. These pre-existing preferences might be expected to minimize set configuration effects. Specifically, high preference strength (Sheng et al. 2005) and high product category knowledge (Malaviya and Sivakumar 1998) have been found to reduce the influence of set configurations on choice. In instances where their preferences determine that a specific attribute(s) is the most important, consumers may process information on the important attribute(s) first to screen alternatives for consideration. The selection of the next attribute(s) for processing, however, may not

be critical for the respondent. Here, a salient feature of the choice set might influence which attribute they consider next, thus influencing choice. For instance, increased salience of an attribute may lead to increased attention to that attribute (Fazio et al. 1989; Jarvenpaa 1990; Kardes et al. 2002; Taylor et al. 1979). A consumer using an attribute-wise EBA-type choice strategy in this case might start with eliminating alternatives by attribute X, then Y, then Z. A choice set configuration increasing salience for Z may change this order such that the consumer eliminates alternatives using attribute X first, but then uses Z before moving on to Y. For example, imagine a consumer who is considering the purchase of a mountain bike and has a limited budget for the purchase. The consumer may start with eliminating alternatives based on price and continue with parts quality. This consumer should pick the bike with the highest quality parts that adheres to the budget constraint. However, if there are three expensive bikes prominently displayed in the store with their low weight clearly highlighted, the consumer may become more aware of weight and decide that it is an important factor. The consumer may then use weight before parts quality in their evaluation of bikes. The lightest bike that fits the consumer's budget may now be chosen.

The use of both prior-preferences and information based on choice set configuration suggests a distinction between what I term *primary* and *secondary level* set configuration effects. A *primary level* set configuration effect would be when the order of attribute(s) used to screen and choose alternatives is derived from information found in the configuration of the choice set. In such cases, relational comparisons between alternatives in the choice set might be used to make a decision without requiring the use of another choice strategy. For instance, the presence of a decoy may make a dominating target more attractive and lead to choice of the more attractive target alternative. The hypotheses discussed in the preceding section are examples of primary level set configuration effects. A *secondary level* set configuration effect would be in cases where prior preferences determine the attribute(s) used to screen alternatives and in what order they are processed, whereas the attribute(s) used to make a choice from among considered alternatives is determined by information found in the choice set configuration. For instance, consumers might use a specific attribute level to reject a number of alternatives and

arrive at a handful of considered alternatives. However, further evaluations of attributes and/or alternatives to make a choice may then be influenced by relational cues from the configuration of the choice set.

The experiment in the next chapter is designed to test the hypotheses related to set configuration effects in more complex choice tasks than typically studied and to explore the potential for secondary level effects. It is expected that set configuration effects will occur in complex choice tasks and that choice set configurations may also influence choices in some way at a secondary level. Specifically, this experiment tests if uniqueness (H_1) and asymmetric dominance (H_2) set configurations will increase choice of a target alternative in complex choice tasks. This experiment also examines the need for justification as a moderator of these effects (H_{3a} and H_{3b}) and explores the possibility of secondary level effects. However, expectations of effects at the secondary level are exploratory. Hence, no formal hypotheses are made regarding the potential for these effects. Although choice is the primary variable of interest, other variables are also measured to infer information processing and to find out if uniqueness and dominance are observed. How information is attended in screening alternatives (i.e. the order of attribute processing and how much information is processed) to create consideration sets is central to the hypotheses in this dissertation. For instance, which attributes are screened first may determine if the uniqueness of an alternative is salient. If the unique alternative does not meet an important cut-off level on another important attribute used in screening, however, it may not be considered or chosen. Therefore, the importance of each attribute and the cut-off values on those attributes are measured to infer how respondents process information. In developing the hypotheses, I argued that consumers can observe uniqueness and dominance in complex choice tasks. This implies that respondents should observe that a unique alternative is unique and that a dominating alternative is similar to other alternatives (i.e. the decoy alternatives). A dominating alternative should also be seen as more attractive, or favorable, than its decoys. Therefore, similarity (uniqueness) and favorability of alternatives are measured.

3. EXPERIMENT 1

3.1. Purpose of the study

Experiment 1 was designed to test hypotheses regarding the influence of uniqueness and asymmetric dominance set configurations on choice in complex choice tasks (hypotheses H_1 and H_2). Experiment 1 also tests for a moderating role of a need for justification on these effects (hypotheses H_{3a} and H_{3b}).

3.2. Overview of the design

The hypotheses laid out in this study argue that set configuration effects will occur in more complex choice tasks than typically studied. Therefore, it was necessary to create complex choice tasks to tests these hypotheses. Research by Payne (1976) implies that decision tasks reaching six alternatives that vary on four attributes may be considered complex choice tasks. Hence, sets containing nine student housing room alternatives varying on four attributes (size, distance from campus, number of students having to share an bathroom and monthly rental price) were created in the current study to be well within the criteria for complex tasks suggested by Payne's research (see Appendix 10.2 for example stimuli). In addition to being complex, the choice task should be somewhat difficult for respondents.[12] This is because set configuration effects are more likely to occur as decisions become more difficult (Bettman et al. 1998). One way for a choice to be difficult, as discussed earlier, is for the choice to involve equally attractive alternatives that require trade-offs among important attributes. Conjoint analysis was used to construct difficult decision tasks in the current study: equally attractive alternatives that required trade-offs among important attributes were created. A value for each attribute level (*part-worth*) was estimated from responses to the conjoint task: a level that is more favorable on an attribute has a

[12] Complex choice tasks may or may not lead to the perception of difficult decisions. For example, a respondent may review many alternatives and find that one alternative clearly matches their preferences better than others (i.e. that alternative is noticeably higher in utility than other alternatives). The respondent should find picking this alternative to be relatively easy. Having to choose between many alternatives that are equally attractive (i.e. equivalent utilities), on the other hand, might lead to increased perception of decision difficulty versus choosing among alternatives of varying attractiveness. Hence, task complexity and choice difficulty are conceptually different.

higher part-worth than a less favorable level. The sum of part-worths for each attribute describing an alternative is the overall utility for that alternative: an alternative with a higher utility is more attractive than an alternative with a lower utility. Different combinations of part-worths for all four attributes used in this study were summed to create heterogeneous alternatives with the same overall utility. Specifically, alternatives were created by first combing different combinations of levels on the three non-price attributes. For example, one housing alternative might be $21m^2$, be 40 minutes from campus and require two students to share a bathroom, whereas another alternative might be $18m^2$, be 15 minutes from campus and require three students to share a bathroom. Part-worths of each attribute level were summed to identify each alternative's utility. These alternatives would most likely not be equal in utility, so price was then used to adjust the utility of each alternative to the same level. An implication of creating equal utility alternatives in this way is that alternatives that are highly favorable on one important attribute, are likely to be less favorable on another important attribute. This suggests that potentially difficult trade-offs would be required to make a choice from among these equal utility alternatives.

Once equal utility alternatives were created, sets needed to be constructed to test for set configuration effects; specifically, sets containing a unique alternative and asymmetric dominance relationships. In the uniqueness sets, all nine alternatives were equal in utility to each other. In the asymmetric dominance sets, on the other hand, at least seven[13] of the nine alternatives were equal in utility to each other, making those viable alternatives (i.e. could reasonably be chosen). Nonviable *decoy* alternatives were created to be clearly inferior (i.e. lower in overall utility) and should not be chosen.

Respondents should be interested and involved in the task to ensure elaboration of the information presented in this experiment. Given students as respondents, student housing for a semester abroad in Australia was chosen as the setting. This setting was considered to represent a relevant (many students travel abroad) and involving

[13] In asymmetric dominance sets including two decoys, there were seven viable alternatives and two nonviable decoys. In asymmetric dominance sets including one decoy, there were eight viable alternatives and one nonviable decoy.

decision (deciding where one should live for an extended period of time should require elaboration). Furthermore, familiarity with a brand(s) presented in a set might provide a cue to determine choices. This potential influence of brand familiarity on choice was removed by using plausible sounding fictitious names for the alternatives (see Appendix 10.1 for descriptions of alternatives).

3.3. Methodology

3.3.1. Pretest 1

The first step in creating complex choice tasks was to elicit attribute-level preferences. Hence, a first pretest was conducted to elicit attribute-level preferences. Similar to a study by Kivetz et al. (2004),[14] 18 students completed a traditional conjoint analysis card ranking task to elicit utility weights for attributes in the current experiment. Based on this pretest, alternatives were created that varied on the four most important attributes and were constrained to be equal in overall utility (equally attractive alternatives). Conjoint elicited utilities were also used to determine the relative order of importance of the attributes. The sum of all attribute importances for a respondent is 1.0, with higher numbers for an attribute indicating greater importance. Price ($Importance_{\text{price}}$ = .403) was the most important attribute. Distance ($Importance_{\text{distance}}$ = .365) was the most important non-price attribute, followed by bathroom sharing ($Importance_{\text{bathroom}}$ = .140) and then size ($Importance_{\text{size}}$ = .092).

3.3.2. Pretest 2

The alternatives created from preferences elicited in the first pretest were subject to a second pretest using 16 different students to determine choice share by alternative. No alternative was found to be significantly more likely to be chosen than predicted by a proportional model (equal share). On a 7-point Likert scale, price was the most important attribute (M_{price}= 5.00, SE = .387). Distance (M_{distance} = 4.63, SE = .437) and

[14] The Kivetz et al. (2004) study examined compromise effects in complex choice tasks using a traditional card ranking conjoint analysis design to measure preferences for levels on each of four attributes. Based on these preferences, five equal utility alternatives were created and then presented to respondents in a choice task.

bathroom sharing ($M_{bathroom}$ = 4.38, *SE* = .482) were the second and third most important attributes respectively, followed by size (M_{size} = 3.62, *SE* = .375). These findings are in line with relative importance of the attributes indicated by conjoint utilities in Pretest 1.

3.3.3. Participants and procedure

423 second and third year bachelor's students at a Norwegian business school completed a pen and paper survey. The survey was conducted in a large lecture hall during class breaks and respondents were eligible to win a portable audio player for their participation. Students were presented nine different student exchange housing alternatives to make a choice from. These alternatives were created using utilities from Pretest 1 and described by four attributes; room size, distance from campus, monthly rental price and how many students were to share a bathroom.[15]

3.3.4. Design

The design of this experiment is complex because many tests are conducted simultaneously. Specifically, the following variables were manipulated in the experimental design: choice set configuration (uniqueness, asymmetric dominance with one decoy, and asymmetric dominance with two decoys), target attribute (most-important non-price attribute, another important non-price attribute), and need for justification (included, not included).

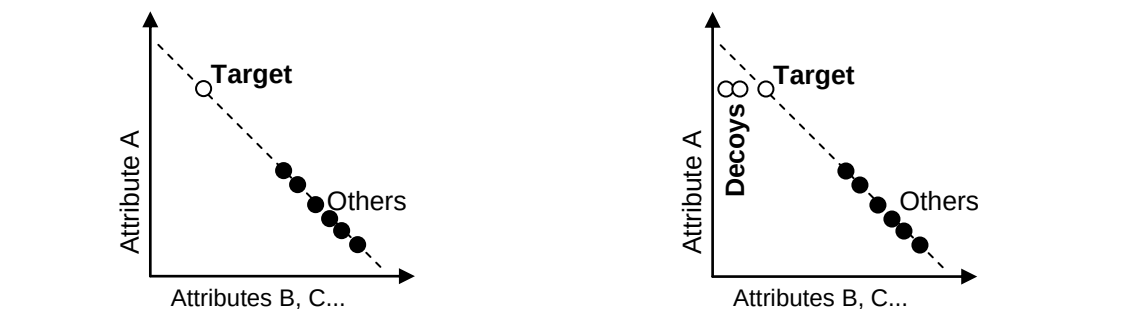
Choice set configurations

Choice set configurations were tested using the most-important non-price attribute (MINPA; distance) and/or another important non-price attribute (AINPA; bathroom sharing) as target attributes. This was done to test for set configuration effects on attributes with different levels of importance. Although important, price was not used as a target attribute because it can serve multiple roles in addition to being an attribute used to describe an alternative. For example, price can be an indication of quality or a

[15] All four attributes, including price, were created in the same manner using conjoint elicited utilities.

budget allocation constraint (Erickson and Johansson 1985; Monroe 1973). Instead, price was used as a means to set utility levels to be the same for each alternative. Uniqueness and asymmetric dominance sets were tested using both target attributes. The range on the MINPA (distance) was set to vary from a short walk to 35 minutes by bus to campus. The range on the AINPA (bathroom sharing) was set to vary from having a private bathroom to having to share a bathroom with up to 3 other students.[16] Choice set configurations were manipulated by varying the number of decoy alternatives within the set (see Figure 3-1 for an illustration of these choice set configurations).[17]

FIGURE 3-1:
Choice set configurations



NOTE.–Alternatives are shown on two attributes here for illustration only. In the experiment, all alternatives are described on four attributes. Moving along an attribute in the direction of the arrow indicates a more favorable level on that attribute. All alternatives on the dotted line are equal in utility, whereas alternatives to the left of the dotted line are lower in utility (i.e. they are nonviable inferior alternatives). The uniqueness choice set includes a single target alternative and the asymmetric dominance choice set includes a target alternative joined by one to two decoys. Attribute A in this example is the target attribute because it is the attribute that targets and decoy alternatives share the most favorable level on. No other alternatives in a set share this attribute level.

To create the *uniqueness* choice sets, a target alternative was the only alternative to occupy the most favorable level on a target attribute and was equal in overall utility to the other alternatives in the set. *Asymmetric dominance* sets included a target

[16] The range on the rent attribute was NOK 2 450 to NOK 5 850. The range on size was 11m^2 to 21 m^2.
[17] More precisely, a target attribute is the attribute that a target(s) and decoy alternatives share the most favorable level on. No other alternatives in a set share this attribute level.

alternative that occupied the most favorable level on a target attribute and was equal in overall utility to the other alternatives in the set. A decoy(s) alternative was designed to share this most favorable attribute level with the target alternative, yet be inferior to, or dominated by, the target alternative on other attributes. In case the presence of one decoy was not salient enough to focus attention on the dominance relationship, asymmetric dominance choice sets with both one and two decoys were tested to improve the likelihood of the relationship between alternatives being detected. Decoys had lower overall utility values than all other alternatives in the set.

Need for Justification (NFJ)

To test the need for justification, respondents in need for justification conditions were informed that they would be asked to explain why they selected the alternative they chose. To close the loop, respondents were requested to provide up to five reasons for their choice at the end of the survey. The need for justification was tested in sets using the most-important non-price target attribute (MINPA; distance).

Experimental Sets

Respondents were randomly assigned to 1 of 9 different sets suggested by the above discussion (see Table 3-1). MINPA is used to identify sets in which the target alternative is at the most favorable level on the most-important non-price attribute and AINPA is used to identify sets in which the target alternative is at the most favorable level on another important non-price attribute. The addition of decoys alternatives was used to manipulate set configurations. Both single and dual decoy choice set configurations were tested (see Table 3-1; for a list of alternatives presented in each choice set and a description of the alternatives by their attributes, see Appendix 10.1).

TABLE 3-1:
Experiment 1 choice set configurations

Set	*n*[18]	Target attribute	*Set configuration*	NFJ
1	*67*	MINPA	UNIQUENESS	Yes
2	*69*	MINPA	ASYMMETRIC DOMINANCE (*1 decoy*)	Yes
3	*27*	MINPA	ASYMMETRIC DOMINANCE (*2 decoys*)	Yes
4	*40*	AINPA	UNIQUENESS	Yes
5	*38*	AINPA	ASYMMETRIC DOMINANCE (*1 decoy*)	Yes
6	*37*	AINPA	ASYMMETRIC DOMINANCE (*2 decoys*)	Yes
7	*36*	MINPA	UNIQUENESS	No
8	*70*	MINPA	ASYMMETRIC DOMINANCE (*1 decoy*)	No
9	*39*	MINPA	ASYMMETRIC DOMINANCE (*2 decoys*)	No

NOTE.–"MINPA" = the most-important non-price attribute (distance) and AINPA" = another important non-price attribute (bathroom). Only one MINPA target alternative was present in all sets. Three equal utility AINPA alternatives were always present when the target attribute was MINPA (sets 1, 2, 3, 7, 8 & 9). "Set configuration" refers to choice set configuration. NFJ is for the need for justification: "yes" indicates respondents were informed that they would need to provide reasons for their choice, whereas "no" indicates that they were not informed.

3.3.5. Measurement

This study examines the influence of uniqueness and asymmetric dominance on choice of an alternative. Hence, choice is the primary dependent variable in this experiment. Testing the hypothesized influences of set configurations on choice requires creating sets that include a unique alternative or an asymmetric dominance

[18] Not all choice sets included students from the first of two respondent groups. Choice sets 3-7 and 9 were administered to the second group, whereas the other choice sets were administered to the first respondent group. This could have influenced experimental results. To check for this, measures of attribute importance, attribute cut-off values and choice difficulty were compared using t-tests between groups in the choice sets that both groups appeared in. There were no significant differences between groups on these measures.

relationship. In these sets, unique alternatives should be perceived as dissimilar to other alternatives, whereas dominating target alternatives should be seen as similar to and more favorable than their decoys. Hence, similarity and favorability of alternatives are measured to check that these sets are created appropriately. Although not a necessary requirement, set configuration effects are more likely to occur when decisions are more difficult (i.e. require hard trade-offs) relative to easier (Bettman et al. 1998). Therefore, the questionnaire measures choice difficulty. With regard to information processing, the hypotheses in this dissertation suggest that some consumers use attribute-wise noncompensatory processing, such as Lexicographic or Elimination-by-Aspects (EBA) strategies, to create consideration sets. The primary criteria used in many noncompensatory processing models are the importance of attributes and required levels on attributes. For instance, respondents using an EBA strategy create consideration sets by rejecting all alternatives not meeting certain levels on important attributes. Hence, consideration of alternatives, attribute importance and required levels on each attribute were measured.

Independent variables

As implied by the design of this experiment, there were three independent variables. First, two target attributes were tested: the most-important non-price attribute (MINPA) and another important non-price attribute (AINPA). Second, three set configurations were presented: uniqueness, asymmetric dominance with 1 decoy and asymmetric dominance with 2 decoys. The third factor, need for justification, was tested by requiring vs. not requiring respondents to justify their choice.

Dependent variables

The following dependent variables are included in this experiment: consideration, choice, similarity, favorability, attribute importance, attribute level cut-off values and choice difficulty. All variables below were measured by 7-point Likert-type scales,

except for the binary consideration and choice scales and the attribute level cut-off values.[19] Scales were translated to Norwegian for the experiment.

Consideration and choice. Consideration for each respondent was measured using binary scales adapted from Huber et al. (1982), Lehmann and Pan (1994) and Simonson (1989). Consideration was measured by a two item scale asking respondents which alternatives they would seriously consider renting and which alternatives were acceptable to them. The choice measure asked which housing alternative the respondent would choose to rent.

Similarity. The similarity (uniqueness) of each alternative relative to all alternatives in each set was measured using a 2-item scale adapted from Barone, et al (2000). Respondents were asked if each individual alternative had features that distinguished it from the others and how similar each alternative was to the others in the set. Many respondents only filled out the first of the two similarity questions for alternatives. Hence, only the first item was used in analyses.

Favorability. Favorability of alternatives was measured using a 2-item scale adapted from Brunner and Hensel (1992). Respondents were asked to indicate how each alternative ranked against the other alternatives and to rate the attractiveness of each alternative. Cronbach's α for the 2 items for each alternative ranged from $\alpha = .560$ to .859 (only one alternative had an $\alpha < .6$). Hence, the mean of the two items was used as the measure of favorability in the subsequent analyses.

Attribute importance. Respondents were asked to rate how important each attribute was in their evaluation of alternatives using a 7-point scale ranging from 1, "not important" to 7, "very important". This single item scale was similar to scales used by Simonson (1989) and Sujan and Bettman (1989).

[19] Most of the Likert scale data in this experiment was non-normal, so nonparametric tests were originally used to calculate significance. However, it was found that parametric tests indicated similar levels for significance. Therefore, parametric tests were reported throughout to simplify interpretation of results. Significance calculated using nonparametric tests can be found in the Appendix 10.9.

Attribute level cut-off values. Respondents were asked to indicate their minimum acceptable level on each attribute for an alternative to be considered. These included minimum acceptable room size, furthest distance from school (in minutes), maximum number of students to share a room with and highest acceptable rental price.

Choice difficulty. To assess choice difficulty, respondents were asked how difficult it was to choose between the alternatives on a scale ranging 1, "very easy", to 7, "very difficult".

3.3.6. Notation used to identify alternatives

Throughout this experiment, the following notation will be used to simplify identification of alternatives and their relationship with other alternatives. Alternatives will be described by text in small capitalization, subscript and parentheses. SMALL CAPS indicates a specific relationship of the alternative being identified to other related alternatives in a set. An alternative may be a TARGET, a DECOY, a COMPETITOR to the target or some OTHER non-relevant alternative. These are not meant to be mutually exclusive terms. An alternative can be a target in one set configuration and a competitor in another set. Text in $_{\text{SUBSCRIPT}}$ indicates the target attribute. The target attribute can be the most-important non-price attribute, $_{\text{MINPA}}$, or another important non-price attribute, $_{\text{AINPA}}$. Text in parentheses supplies any additional information that helps to identify the alternative in that set. For example, $\text{TARGET}_{\text{MINPA(HT)}}$ indicates that the alternative is a target alternative in the set and that it occupies the most favorable level on the most-important non-price attribute (MINPA; distance). In this specific case, HT refers to the name of the housing alternative, as identified in Appendix 10.1. Alternatively, $\text{DECOY}_{\text{MINPA(DP)}}$ indicates that the alternative is a decoy alternative. It shares the most favorable level on the MINPA as, and is dominated by, $\text{TARGET}_{\text{MINPA(HT)}}$.

3.4. Results

Before analyzing results related to specific set configuration effects, I wanted to check that the presented set configurations were appropriate for testing for set configuration

effects. Prior research (Bettman et al. 1998; Simonson 1989) suggests that set configuration effects are more likely to occur when consumers perceive the choice task to be more difficult rather than easier. Hence, one way to check that set configurations were created properly is to review respondents' perceptions of the difficulty of the choice task. Respondents found it at least somewhat difficult to make a choice among alternatives in tested sets ($M_{choice\ difficulty}$ = 4.38, SE = .07). This suggests the choice task was not easy for respondents and set configuration effects should be more likely to be observed. Additional tests of the appropriateness of presented set configurations are described under the manipulation check headings in the subsections below.

3.4.1. Uniqueness

Manipulation check: awareness of uniqueness

An argument for the influence of uniqueness on choice in complex choice tasks put forth in hypothesis H_1 is that respondents will perceive the unique alternative as being unique. Hence, similarity was measured to see if the target alternatives were considered to be unique. Target alternatives in MINPA (most-important non-price attribute; or distance) sets were rated as more unique in the uniqueness relative to asymmetric dominance sets. When $\text{TARGET}_{\text{MINPA(HT)}}$ was unique (the only walking-distance-to-campus alternative), it was perceived to be more unique (Set 1, M_{unique} = 4.74, n = 62) than in the presence of two decoys in the asymmetric dominance choice sets (Set 3, $M_{\text{asymmetric dominance}}$ = 3.85, n = 27, t = 3.72, p < .001).[20] Differences in uniqueness ratings were also observed in the AINPA (another important non-price attribute; or bathroom sharing) sets. $\text{TARGET}_{\text{AINPA(RH)}}$ was seen as more unique when it was unique (the only private-bathroom alternative) in the set (Set 4, M_{unique} = 4.82, n = 38) relative to the asymmetric dominance set with two decoys (Set 6, $M_{\text{asymmetric dominance}}$ = 3.89, n = 37, t = 2.67, p < .01). Furthermore, target alternatives were perceived to be the most unique of all alternatives when there was only one target versus when decoys were present. (See Appendix 10.5 for similarity ratings of

[20] This was when justification was required. This finding also held when justification was not required (Set 7, M_{unique} = 5.29, n = 35, vs. Set 9, $M_{\text{asymmetric dominance}}$ = 3.46, n = 39, t = 5.90, p < .001).

included alternatives in each experimental group). Hence, uniqueness of target alternatives seems to have been detected by respondents in this complex choice task.

Influence of uniqueness on choice

To test for set configuration effects, choice of target alternatives was compared with an equal proportions model as a baseline. There should be no rational reason to prefer one alternative over another in making a choice among alternatives that are equal in utility. Because of this, choice share between equivalent utility alternatives among consumers should be divided equally. In the current experiment, alternatives were created to be equally attractive for respondents in aggregate. Hence, choice should be shared equally among the nine alternatives (11.1% each). A significant difference in actual choice share vs. an equal proportion of choice model for the alternatives included in a choice set would suggest that respondents are using something other than a compensatory strategy for choice.[21] $\text{TARGET}_{\text{MINPA(HT)}}$ ($Choice_{\text{observed}}$ = 20.9% vs. $Choice_{\text{predicted}}$ = 11.1%, n = 67, $p < .05$, *binomial test, one-tailed*) and $\text{OTHER}_{\text{(CP)}}$ ($Choice_{\text{observed}}$ = 17.9% vs. $Choice_{\text{predicted}}$ = 11.1%, n = 67, $p < .1$, *binomial test, one-tailed*) achieved significantly greater choice share than predicted by a proportional model in the MINPA uniqueness set (set 1 in Table 3-2).[22] A compensatory model can be rejected in this case; suggesting that other factors influenced choice. Furthermore, this increase in choice of $\text{TARGET}_{\text{MINPA(HT)}}$ was predicted by Hypothesis H_1; that being unique will increase choice of an alternative in a complex choice task. $\text{OTHER}_{\text{(CP)}}$ was also chosen more often than predicted, but the reason for this is not clear. This alternative, $\text{OTHER}_{\text{(CP)}}$, was the second cheapest in the set, but not highly favorable on any other attributes. An analysis based on prior preferences for those who chose this alternative might have helped explain higher than expected choice of $\text{OTHER}_{\text{(CP)}}$. However, this type of analysis was not possible because preferences were only measured post-choice task. Post-choice task measurement opens for the possibility the respondents matched their preferences to their choice rather than indicated their actual preferences. In contrast, no alternative, including $\text{TARGET}_{\text{AINPA(RH)}}$, achieved

[21] A proportional model was also used as one baseline in an early set configuration effects study by Huber and Puto (1983). They found that asymmetric dominance increased choice of a target (the dominating alternative) compared with a proportional model (equal choice).

[22] Alternatives $\text{OTHER}_{\text{(BH)}}$ and $\text{OTHER}_{\text{(CH)}}$ were chosen less often than predicted. Because very few respondents chose these alternatives, it was difficult to access the reason for why they were not chosen.

significantly greater than the 11.1% predicted for alternatives in the AINPA uniqueness condition (set 4).[23] Because these findings are mixed, they provide weak support for H_1.

TABLE 3-2:
UQ: observed choice share versus proportional model

Set	Alternatives							
	TARGET	OTHER						
	HT	AT	BH	CH	CP	EP	HH	RH	WP
1: Uniqueness, MINPA (*n*=67)	20.9**	14.9	1.5***	4.5*	17.9*	11.9	11.9	7.5	7.5

Set	Alternatives							
	TARGET	OTHER						
	RH	AT	BH	CP	HH	HT	LH	MP	WP
4: Uniqueness, AINPA (*n*=40)	15.0	15.0	2.5*	17.5	7.5	5.0	12.5	17.5	7.5

NOTE.–The numbers in each cell indicate observed choice share percentages for each alternative given the choice set that they were presented in. Alternatives are listed by their housing code. "HT" = $\text{TARGET}_{\text{MINPA(HT)}}$ and "RH" = $\text{TARGET}_{\text{AINPA(RH)}}$. Housing codes and descriptions of alternatives can be found in Appendix 10.1. "MINPA" = most-important non-price attribute (distance) and "AINPA" = another important non-price attribute (bathroom). "UQ" = Uniqueness. Due to rounding, totals may not add to 100. Significance is calculated for observed choice of alternatives vs. equal proportion model predictions of 11.1% per alternative at the levels indicated below.[24]

*p<.1

**p<.05

***p<.01 (all binomial tests, one-tailed).

[23] Alternative $\text{OTHER}_{(BH)}$ was chosen less often than predicted. Because very few respondents chose this alternative, it was difficult to access the reason for why it was not chosen.

[24] The use of p <.1, as opposed to p <.05, as the minimum acceptable level to indicate significance of findings in this study is based primarily on three reasons. First, the use of p <.1 to indicate significance is not uncommon in the set configuration effects literature (e.g. Dhar and Simonson 1992; Huber et al. 1982; Mishra, Umesh, and Stem 1993; Sanbonmatsu et al. 1994; Simonson 1989). Second, several experiments in this study will test for set configuration effects. Therefore, weak significance in one study can be strengthened by observance of the same effect across studies. Third, given the complexity of the set configurations created for the experiments in this study, restricting significance to p <.05 could lead to a failure to observe some of the effects that I would like to explore (a Type II error), such as the potential for secondary level effects. If weak effects are observed, small adjustments to the research design based on initial findings could improve testing accuracy in subsequent experiments.

3.4.2. Asymmetric Dominance

Manipulation check: awareness of dominance

For an attraction effect to occur, respondents would need to notice the dominance relationship in the asymmetric dominance choice sets. A way to check if respondents noticed the asymmetric dominance relationship in this experiment is to test if respondents considered the target and its decoys as a group and rated the target higher in favorability than its decoys. Considering the target and decoys together would suggest that respondents observed the similarity of those alternatives. Judging the target to be more favorable than its decoys would suggest that the respondents also observed the dominance relationship (i.e. the target is superior to, or more favorable, than its decoys). First, a positive correlation between considering the target and considering the decoys might suggest that respondents were comparing these alternatives to each other as a group. Consideration of $\text{TARGET}_{\text{MINPA(HT)}}$ was significantly correlated with consideration of its decoys (sets 2 and 3, $\text{DECOY}_{\text{MINPA(DP)}}$, $r_{pb} = .52$, $n = 96$, $p < .001$, *one-tailed*; and set 3, $\text{DECOY}_{\text{MINPA(FT)}}$, $r_{pb} = .32$, $n = 27$, $p < .05$, *one-tailed*)[25] in MINPA sets. In the AINPA asymmetric dominance set, consideration of $\text{TARGET}_{\text{AINPA(RH)}}$ was significantly correlated with consideration of its decoys (sets 6 and 7, $\text{DECOY}_{\text{AINPA(BP)}}$, $r_{pb} = .38$, $n = 75$, $p < .001$, *one-tailed*; and set 7, $\text{DECOY}_{\text{AINPA(SH)}}$, $r_{pb} = .23$, $n = 37$, $p < .1$, *one-tailed*). Associations between other alternatives were not observed regardless of set. Second, respondents should also find the target alternative to be more attractive than its decoys for an attraction effect to occur. Thus, differences in respondents' ratings of favorability for the target alternative relative to the other alternatives were reviewed. $\text{TARGET}_{\text{MINPA(HT)}}$ (Set 2, $M = 4.20$; Set 3, $M = 4.24$)[26] was rated higher in favorability than its decoys (Set 2, $\text{DECOY}_{\text{MINPA(DP)}}$, $M = 3.60$, $n = 68$, $t = 3.71$, $p < .001$; Set 3, $\text{DECOY}_{\text{MINPA(DP)}}$, $M = 3.56$, $n = 27$, $t = 3.66$, $p < .001$, and $\text{DECOY}_{\text{MINPA(FT)}}$, $M = 3.56$, $n = 27$, $t = 2.96$, $p <$

[25] Point-biserial correlation ("r_{pb}") is used to measure the strength of a relationship when a variable is dichotomous (Field 2009).

[26] Set 2 was an asymmetric dominance set including a target and one decoy, whereas set 3 was an asymmetric dominance set including a target and two decoys.

.01).[27] This also held for asymmetric dominance in the AINPA condition, where the target, $\text{TARGET}_{\text{AINPA(RH)}}$, (Set 5, $M = 4.93$; Set 6, $M = 4.84$) was rated higher in favorability than its decoys (Set 5, $\text{DECOY}_{\text{AINPA(BP)}}$, $M = 4.09$, $n = 38$, $t = 3.87$, $p < .001$; Set 6, $\text{DECOY}_{\text{AINPA(BP)}}$, $M = 4.28$, $n = 37$, $t = 3.09$, $p < .01$, and $\text{DECOY}_{\text{AINPA(SH)}}$, $M = 4.14$, $n = 37$, $t = 2.99$, $p < .01$).[28] In general, respondents grouped targets and their decoys and evaluated targets more favorably than their decoys. This suggests that asymmetric dominance relationships were observed in more complex choice tasks than typically studied.

Influence of asymmetric dominance on choice

Hypothesis H_2 argued that attraction effects can occur in complex choice tasks. This was tested by comparing choice of the target alternative with an equal proportions model. $\text{TARGET}_{\text{MINPA(HT)}}$ was the only alternative to achieve significantly greater choice share ($Choice_{\text{observed}} = 21.7\%$) than predicted by an equal proportions model ($Choice_{\text{predicted}} = 12.5\%$, $n = 69$, $p < .05$, *binomial test, one-tailed*)[29] in the MINPA asymmetric dominance with one decoy condition (set 2 in Table 3-3). Although $\text{TARGET}_{\text{MINPA(HT)}}$ achieved the same level of choice in the MINPA asymmetric dominance with two decoys condition (set 3), the result was not significant ($Choice_{\text{observed}} = 22.2\%$ vs. $Choice_{\text{predicted}} = 14.3\%$, $n = 28$, $p > .1$, *binomial test, one-tailed*). $\text{TARGET}_{\text{AINPA(RH)}}$ achieved greater choice share ($Choice_{\text{observed}} = 21.1\%$) than predicted by an equal proportions model ($Choice_{\text{predicted}} = 12.5\%$, $n = 38$, $p < .1$, *binomial test, one-tailed*) in the AINPA asymmetric dominance with one decoy condition (set 5 in Table 3-3). The slightly lower level of choice for $\text{TARGET}_{\text{AINPA(RH)}}$ in the two decoys condition was not found to be significant ($Choice_{\text{observed}} = 18.9\%$ vs. $Choice_{\text{predicted}} = 12.5\%$, $n = 37$, $p > .1$, *binomial test, one-tailed*). Given the two instances of higher than predicted choice for dominating target alternatives, some support was found for Hypothesis H_2.

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[27] This was also the case when justification was not required: $\text{TARGET}_{\text{MINPA(HT)}}$ (Set 9, $M = 4.36$) was rated higher in favorability than its decoys (Set 9, $\text{DECOY}_{\text{DIST(DP)}}$, $M = 3.73$, $n = 39$, $t = 3.43$, $p < .001$, and, $\text{DECOY}_{\text{DIST(FT)}}$, $M = 3.33$, $n = 39$, $t = 5.50$, $p < .001$).

[28] Set 5 was an asymmetric dominance set including a target and one decoy, whereas set 6 was an asymmetric dominance set including a target and two decoys.

[29] Decoys are created with poor utility values so as not to be chosen. Hence, sets containing one decoy have eight equal utility alternatives that are predicted to obtain 12.5% share each and sets containing two decoys have seven equal utility alternatives that are predicted to obtain 14.3% share.

TABLE 3-3:
AD: observed choice share versus proportional model

Set	Alternatives									
	TARGET	**DECOY**		**OTHER**						
	HT	DP	FT	AT	BH	CH	CP	EP	HH	RH
2: One decoy, MINPA (*n*=69)	21.7**	1.4	-	15.9	2.9***	14.5	13.0	13.0	10.1	7.2
3: Two decoys, MINPA (*n*=27)	22.2	3.7	0.0	7.4	-	25.9	7.4	11.1	7.4	14.8

Set	Alternatives									
	TARGET	**DECOY**		**OTHER**						
	RH	BP	SH	AT	BH	CP	HH	HT	LH	WP
5: One decoy, AINPA (*n*=38)	21.1*	0.0	-	15.8	2.6**	13.2	21.1*	7.9	5.3	13.2
6: Two decoys, AINPA (*n*=37)	18.9	2.7	5.4	16.2	5.4	10.8	16.2	8.1	-	16.2

NOTE.–"MINPA" = the most-important non-price attribute and "AINPA" = another important non-price attribute. The numbers in each cell indicate observed choice share percentages for each alternative given the choice set that they were presented in. Due to rounding, totals may not add to 100. Alternatives are listed by their housing code. "HT" = $\text{TARGET}_{\text{MINPA(HT)}}$ and "RH" = $\text{TARGET}_{\text{AINPA(RH)}}$. Housing codes and descriptions of alternatives can be found in Appendix 10.1. Decoys are created with poor utility values so as not to be chosen and are not compared with a proportional model. Hence, sets containing one decoy have eight viable equal utility alternatives that are predicted to obtain 12.5% share each and sets containing two decoys have seven viable equal utility alternatives that are predicted to obtain 14.3% share each. Respondents in these sets were asked to justify their reasons for choice. Choices made by respondents when justification was not required are discussed later. Significance is calculated for observed choice of alternatives vs. equal proportion model predictions at the levels indicated below.

**p*<.1

***p*<.05

****p*<.01 (*all binomial tests, one-tailed*).

Two other alternatives, OTHER_{BH} and OTHER_{HH}, had choice share that differed between expected and observed choice. As discussed with regard to higher than expected choice of $\text{OTHER}_{(\text{CP})}$ in the previous section, an analysis of why choice of OTHER_{BH} and OTHER_{HH} differed from expected was not possible because respondent preferences were not measured pre-choice task. This issue will be discussed in more detail in the limitations section of this chapter.

3.4.3. Moderating role of need for justification

A comparison of need for justification vs. no need for justification suggests that a need for justification increased respondents' use of choice set configuration cues to make their choices. Choice share for $\text{TARGET}_{\text{MINPA(HT)}}$ was compared between need for justification and no need for justification conditions.[30] As shown in Table 3-4, choice of $\text{TARGET}_{\text{MINPA(HT)}}$ was higher when justification was required ($Choice_{\text{need for justification}}$ = 22%) than when not required ($Choice_{\text{no need for justification}}$ = 13%, $\chi^2(1, n = 308) = 3.72$, $p < .05$, *one-tailed*). This provides support for the notion that choice set configuration cues (i.e. uniqueness and asymmetric dominance) influenced choice when respondents were asked to justify their decisions versus not asked.

TABLE 3-4:
NFJ influence on choice share for $\text{TARGET}_{\text{MINPA(HT)}}$

Set configuration	***Need for Justification***	***No Need for Justification***
Uniqueness	21% *(set 1, n = 67)*	11% *(set 7, n = 36)*
Asymmetric dominance	22%[a] *(sets 2 & 3, n = 96)*	14%[a] *(sets 8 & 9, n = 109)*
Total (*combined uniqueness & asymmetric dominance sets*)	22%[b] *(sets 1, 2 & 3, n = 163)*	13%[b] *(sets 7, 8, & 9, n = 145)*

NOTE.–Percentages indicate choice share for $\text{TARGET}_{\text{MINPA(HT)}}$ in MINPA (most-important non-price attribute) set configurations. $\text{TARGET}_{\text{MINPA(HT)}}$ was chosen more often under a need for justification vs. no need for justification. Descriptions of sets are shown in Table 3-1. All pairs with the same superscript letter are significantly different at the level indicated below.

[a] $p<.1$.

[b] $p<.05$ (*all chi square tests, one-tailed*).

Uniqueness and a need for justification

Hypothesis H_{3a} argues that a unique alternative will be chosen more often when justification is required versus not required in a complex choice task. Although approaching significance and in the same direction as the combined conditions (see

[30] The need for justification was only tested on the MINPA (distance) target attribute.

Table 3-4), choice of $\text{TARGET}_{\text{MINPA(HT)}}$ was not significantly different between need for justification and no need for justification uniqueness sets ($Choice_{\text{need for justification}}$ = 21% vs. $Choice_{\text{no need for justification}}$ = 11%, $\chi^2(1, n = 103) = 1.56$, $p = .11$, *one-tailed*). Although it is not clear from this test if a need for justification led to increased choice of a unique alternative, comparisons of observed choices versus equal proportions models suggest that uniqueness influenced choice only when respondents were asked to justify their decision. $\text{TARGET}_{\text{MINPA(HT)}}$ was chosen more often than predicted by an equal proportions model when justification was required (Set 1, $Choice_{\text{observed}}$ = 20.9% vs. $Choice_{\text{predicted}}$ = 11.1%, $n = 67$, $p < .05$, *binomial test, one-tailed*) and not chosen more often than predicted when justification was not required (Set 7, $Choice_{\text{observed}}$ = 11% vs. $Choice_{\text{predicted}}$ = 11.1%, $n = 36$, $p > .1$, *binomial test, one-tailed*). Hence, weak support was found for Hypothesis H_{3a}: the influence of uniqueness on choice seems to have occurred when justification was required relative to not required in a more complex choice task than typically studied.

Asymmetric dominance and a need for justification

Hypothesis H_{3b} argues that a dominating target alternative will be chosen more often when justification is required versus not required in a complex choice task. Choice of $\text{TARGET}_{\text{MINPA(HT)}}$ was higher when justification was required ($Choice_{\text{need for justification}}$ = 22%) versus not required ($Choice_{\text{no need for justification}}$ = 14%, $\chi^2(1, n = 205) = 2.32$, $p < .1$, *one-tailed*) in the asymmetric dominance with one and two decoy sets. Hence, weak support was found for Hypotheses H_{3b}.

3.4.4. Secondary level set configuration effect

A MINPA asymmetric dominance set configuration seems to have influenced choice among a subgroup of similar alternatives. Three alternatives in MINPA conditions share the most favorable level on an important non-target attribute (i.e. do not need to share a bathroom). Although not the target attribute in MINPA conditions, this attribute (bathroom sharing) is used as the target attribute in the AINPA conditions. Hence, these alternatives are termed AINPA competitor alternatives because they

compete with the target alternative ($\text{TARGET}_{\text{MINPA(HT)}}$).[31] These competitor alternatives are the same in all MINPA sets and vary on how favorable they are on the target attribute (distance): $\text{COMPETITOR}_{\text{AINPA(BEST)}}$ is the most favorable competitor on the target attribute (15 minutes by bus); $\text{COMPETITOR}_{\text{AINPA(MIDDLE)}}$ is at an intermediate level of favorability (25 minutes by bus) and $\text{COMPETITOR}_{\text{AINPA(WORST)}}$ is the least favorable (35 minutes by bus from campus).[32] Choice of $\text{SIMILAR}_{\text{AINPA(BEST)}}$ was higher in the MINPA asymmetric dominance set (Set 3, $C\textit{hoice}_{\text{asymmetric dominance}}$ = 26%) than in the uniqueness set (Set 1, $C\textit{hoice}_{\text{unique}}$ = 6%, $\chi^2(1, n = 94) = 7.42$, $p < .01$, *Cramer's V* = .27, comparison *a* in Table 3-5) when justification was required. Not requiring respondents to justify their decision eliminated this effect ($\chi^2(1, n = 75) = 1.68$, $p > .1$, *Cramer's V* = .15). In general, $\text{COMPETITOR}_{\text{AINPA(BEST)}}$ was the least chosen competitor alternative, but became the most chosen competitor alternative in the asymmetric dominance with need for justification choice set. Hence, some respondents' choices appear to have been influenced at a secondary level. It appears that an asymmetric dominance relationship among some alternatives influenced choice among another subgroup of competitor alternatives; leading to increased choice of the competitor alternative that was most favorable on the target attribute.

[31] Comparisons of target versus competitor alternatives will be made to simplify interpretation of results in some cases. In these instances, the target is the target alternative in the set configuration being discussed at the time (e.g. $\text{TARGET}_{\text{MINPA(HT)}}$). Competitor alternatives are alternatives that are being contrasted with the target in some way (e.g. alternatives that are similar on some other attribute). Alternative RH is referred to as $\text{TARGET}_{\text{AINPA(RH)}}$ when it is the target of a manipulation and $\text{COMPETITOR}_{\text{AINPA(RH)}}$ when it is not the target of the manipulation.

[32] The three similar non-dominated AINPA competitor alternatives can also be identified by their codes indicated in Appendix 10.1: "CH" = $\text{COMPETITOR}_{\text{AINPA(BEST)}}$, "RH" = $\text{COMPETITOR}_{\text{AINPA(MIDDLE)}}$, and "EP" = $\text{COMPETITOR}_{\text{AINPA(WORST)}}$.

TABLE 3-5:
Choice of competitor alternatives in MINPA conditions

Competitor Alternatives	Set			
	Need for justification		***No need for justification***	
	Unique, MINPA (Set 1, n = 67)	Asymmetric dominance, MINPA (Set 3, n = 27)	Unique, MINPA (Set 7, n = 36)	Asymmetric dominance, MINPA (Set 9, n = 39)
$\text{COMPETITOR}_{\text{AINPA(BEST)}}$	6%[a]	26%[ab]	3%	10%[b]
$\text{COMPETITOR}_{\text{AINPA(WORST)}}$	12%[c]	11%	31%[c]	21%
$\text{COMPETITOR}_{\text{AINPA(MIDDLE)}}$	7%	14%	11%	18%

NOTE.–"MINPA" = most-important non-price attribute and "AINPA" = another important non-price attribute. $\text{COMPETITOR}_{\text{AINPA(BEST)}}$ was the most favorable AINPA competitor on the MINPA (15 minutes by bus); $\text{COMPETITOR}_{\text{AINPA(MIDDLE)}}$ was at a middle level on the MINPA (25 minutes by bus) and $\text{COMPETITOR}_{\text{AINPA(WORST)}}$ was least favorable on the MINPA (35 minutes by bus from campus). $\text{COMPETITOR}_{\text{AINPA(BEST)}}$ was the most chosen AINPA alternative in the MINPA asymmetric dominance choice set with need for justification. $\text{COMPETITOR}_{\text{AINPA(WORST)}}$ was the most chosen AINPA alternative in all other conditions. "Unique, MINPA" = 1 MINPA target, and "Asymmetric dominance, MINPA" = 1 MINPA target + 2 MINPA decoys. All pairs with the same superscript letter are significantly different at the level indicated below.

[a] $p<.01$.

[b] $p<.1$.

[c] $p<.05$ (all chi square tests).

In contrast to choice of $\text{COMPETITOR}_{\text{AINPA(BEST)}}$, $\text{COMPETITOR}_{\text{AINPA(WORST)}}$ was significantly more chosen when respondents were not required to justify their decision (Sets 7, 8 & 9, $Choice_{\text{no need for justification}} = 23.4\%$) than when required to (Sets 1, 2, & 3, $Choice_{\text{need for justification}} = 12.3\%$, $\chi^2(1, n = 308) = 6.63$, $p < .01$). Increased choice of $\text{COMPETITOR}_{\text{AINPA(WORST)}}$ was also observed between justification manipulations in uniqueness sets (Set 7, $Choice_{\text{no need for justification}} = 30.6\%$, vs. Set 1, $Choice_{\text{need for justification}} = 11.9\%$, $\chi^2(1, n = 103) = 5.39$, $p < .05$, comparison *c* in Table 3-5). The trend was the same, although not significant in the asymmetric dominance choice sets. $\text{COMPETITOR}_{\text{AINPA(WORST)}}$ was the cheapest of the three competitor alternatives.

3.5. Discussion

3.5.1. Set configuration effects observed

According to Bettman et al. (1998), set configuration effects (specifically attraction effects) are perceptual in nature and should be less likely to occur in complex choice tasks because relationships among alternatives should be more difficult to detect as the amount of information to be processed increases. In contrast, findings in the current experiment suggest that set configuration effects can occur in complex choice tasks. Uniqueness and asymmetric dominance relationships among alternatives seem to have been salient and led to increased choice of target alternatives. These points are discussed below.

Influence of uniqueness in complex choice tasks

Hypothesis H_1 was supported: a unique alternative achieved higher choice share than suggested by its utility. Results also suggested that respondents observed the uniqueness of the unique alternative. Hence, the unique alternative seems to have been salient. This salience could have led to attitude polarization and increased favorability of the unique alternative. Furthermore, results in the current study suggest that increased choice of a unique alternative in complex choice tasks will occur when justification is required, but not when justification is not required. This finding lends support to Hypothesis H_{3a}, which argued that increased choice of a unique alternative in complex choice tasks should be associated with effortful analytic processing brought about by requiring respondents to justify their decisions.

Influence of asymmetric dominance in complex choice tasks

Hypothesis H_2 was supported: an asymmetrically dominating target alternative was chosen more often than predicted by its utility in some sets. Contrary to Bettman et al.'s (1998) argument that a dominance relationship would be difficult to detect in complex tasks, ratings of similarity and favorability in the current experiment suggest that respondents noticed the dominance relationship. Because respondents detected the dominance relationship, it is plausible that the increase in choice of the

dominating target alternative was due to salience of the dominance relationship. Additionally, higher than predicted choice of the target only occurred when respondents were required, versus not required, to justify their choice. This finding adds support for hypothesis H_{3b}, that a need for justification will increase choice of a dominating alternative.

In summary, the findings discussed in this section provide support for hypotheses H_1 and H_2, that uniqueness and asymmetric dominance will influence choice in complex choice tasks. In addition, Hypotheses H_{3a} and H_{3b} were weakly supported: uniqueness and asymmetric dominance increased choice of target alternatives when respondents were asked to justify their choices relative to when respondents were not asked.

3.5.2. Effects at a secondary level

Influence of asymmetric dominance at a secondary level

Respondents appear to have allowed asymmetric dominance to influence their choice among competitor alternatives not involved in the dominance relationship (i.e. a secondary level set configuration effect seems to have occurred). Results suggest that the competitor alternative that was most favorable on the target attribute was the most chosen competitor alternative when asymmetric dominance was present in the set and justification was required and not in any other condition. I will now propose an explanation for this preliminary finding of a secondary level effect. Some respondents may have used a noncompensatory process to screen alternatives and form consideration sets including the competitor alternatives. These respondents would then have likely employed a compensatory strategy to make a choice, as suggested by prior research (Bettman et al. 1998; Payne 1976). When justification was required and an asymmetric dominance relationship was present in the set, the dominance relationship seems to have been salient. Respondents should have noticed that the dominating target alternative was clearly good because it was better than its decoys. Respondents might then have perceived a loss of value on the target attribute to be more extreme among the competitor alternatives than if they hadn't noticed the dominance relationship. Picking the competitor alternative that was least poor on the

target attribute would minimize this perceived loss and simplify the decision about which competitor alternative to choose; leading to choice of the competitor alternative that was most favorable on the target attribute. This explanation will be discussed in more depth in the next section, when I introduce a hypothesis for the secondary level set configuration effect.

Rejection of an alternative explanation. An alternate price-levels explanation for the secondary level effect can be made and should be addressed. Price was one of the four attributes that alternatives were described on and alternatives were set at dissimilar price levels. The switching out of lower-priced alternatives for higher-priced most-important non-price attribute (MINPA) decoys increased the mean rent per apartment from the overall uniqueness to the asymmetric dominance choice set (from 4 033 NOK to 4 600 NOK per month). It could be that the increased average rent for a choice set made respondents less price sensitive, with the overall price level providing a choice set configuration-based cue suggesting that apartments just cost more. Consequently, the reason for the selection of $\text{COMPETITOR}_{\text{AINPA(BEST)}}$ may be confounded. It could be that the dominance relationship became salient or that respondents were willing to pay more for an apartment when the average price level was higher. Therefore, a binary logistic regression was used to check for an influence of choice set configuration after controlling for each respondent's attribute level cut-off value on price (measured by asking respondents the maximum rent they would pay). A regression including choice set (uniqueness vs. asymmetric dominance) as the independent variable created a model that was a significant predictor of $\text{SIMILAR}_{\text{AINPA(BEST)}}$,[33] $\chi^2(1, n = 93) = 8.28$, $p < .01$, and explained between 8.8% (Cox & Snell R Square) and 17.5% (Nagelkerke R Square) of the variance in choice. Including attribute level cut-off values for rental price as a covariate improved predictive ability of the model, $\chi^2(2, n = 93) = 24.07$, $p < .001$, and increased explanatory power to between 23.5% (Cox & Snell R Square) and 46.7% (Nagelkerke R Square) (see Table 3-6). Choice set (uniqueness vs. asymmetric dominance) was still found to explain variation in choice of $\text{COMPETITOR}_{\text{AINPA(BEST)}}$, although

[33] One outlier was thrown out of the analysis. Upon inspection, it was found that the respondent had indicated a very low willingness to pay, yet selected the relatively very expensive CH alternative.

significance was admittedly reduced ($p < .01$ *vs.* $p < .1$).[34] Hence, set configuration was found to be at least weakly associated with the increase in choice of $\text{COMPETITOR}_{\text{AINPA(BEST)}}$ after controlling for the influence of price.

TABLE 3-6:
Regression predicting choice likelihood of $\text{COMPETITOR}_{\text{AINPA(BEST)}}$

	B	S.E.	Wald	df	Significance	Odds Ratio	95,0% C.I. for Odds Ratio	
							Lower	*Upper*
Choice set	-1.565	.858	3.323	1	.068	.209	.039	1.125
ALCV	.002	.001	10.884	1	.001	1.002	1.001	1.003
Constant	-10.590	3.117	11.545	1	.001	.000		

NOTE.–"Choice set" = asymmetric dominance vs. uniqueness and "ALCV" = attribute level cut-off value. Model prediction significance: $\chi^2(2, n = 93) = 24.07$, $p<.001$, Cox & Snell R Square = 23.5%, Nagelkerke R Square = 46.7%.

3.5.3. Hypothesis: secondary level effect

A formal hypothesis based on the preliminary finding of a secondary level effect in this experiment will now be proposed.[35] Some consumers might first screen alternatives to determine a consideration set consisting of competitor alternatives that are similar because the share the most favorable level on an attribute (X). However, a choice would still need to be made among these competitor alternatives. The choice among competitor alternatives might be influenced by a set configuration including an asymmetrically dominating target alternative and its decoys. A weight-change model (discussed in the section describing attraction effects) would suggest that several alternatives sharing the highest level on another attribute (Y), or target attribute, might lead to salience of that target attribute (Y). A dominance relationship among the subgroup of alternatives sharing the highest level on the target attribute (i.e. a target alternative and its decoys) should not be difficult to detect because only a few alternatives are being compared. This would create the perception of a good alternative; the dominating target alternative. Consumers should not choose the target

[34] A model that added individual level importance of the price attribute was not found to be significant.
[35] The secondary level effect was observed with asymmetric dominance, but was not observed for unique alternatives. Hence, no secondary level effect hypothesis is developed for uniqueness.

alternative, as they already have their set of considered competitor alternatives, which is based on another attribute (X). However, consumers may find that they can use this good (target) alternative to help decide among the competitor alternatives by framing the choice as a trade-off between their considered alternatives and the target alternative. They should notice that all of the competitor alternatives represent a loss of varying degrees on the target attribute (Y) compared with the dominating target alternative. Choosing the competitor alternative that is best on the target attribute (Y) should minimize this loss. Thus, the chosen alternative would be best on the preferred attribute (X) and better than the other competitor alternatives on the target attribute (Y). Hence,…

> *H_4: an asymmetric dominance relationship among non-considered alternatives will increase choice of the considered alternative that is most favorable on the target attribute relative to the absence of an asymmetric dominance relationship*

3.5.4. Limitations

The following limitations associated with Experiment 1 will now be discussed. First, a lack of pre-choice preference measurement inhibited analysis of some choices. Second, price was a potential confound. Finally, sample sizes limited the potential for measuring significance of results in some cases.

Lack of pre-choice task preference measurement. In this experiment, utility levels were estimated based on results from two pretests. These utilities were used to create alternatives with equal utilities in aggregate that were then presented to different respondents in the main experiment. It was assumed that choice share among respondents would be shared equally across alternatives; hence actual choices were compared with an equal proportions model. Given that alternatives were created using preferences in aggregate, however, it is unlikely that each individual respondent found all alternatives to be equally attractive. Furthermore, preferences for respondents in the main experiment were measured post-choice task. If individual prior preferences had been known, comparisons could have been made on whether each individual

respondent chose the most optimal alternative (i.e. the alternative with the highest utility for the individual) according to their own preferences. A more precise comparison would have been to use predictions of choice based on individual's own preferences (i.e. elicitation of individual-level preferences pre-choice task).

Addressing potential price confound. Price sensitivity may have confounded the finding of a secondary level set configuration effect. Switching out pairs of alternatives for higher priced decoys in the distance-target set configurations caused variation in average price levels between choice sets. This variation between sets was found to have some influence on choice where the secondary level set configuration effect was observed. However, a binary logistic regression controlling for price sensitivity showed that set configuration was still a significant factor in explaining increased choice of the competitor alternative that was best on the target attribute. Subsequent experiments are careful to account for this potential confound by holding price levels constant across conditions.

Sample sizes. Even though the number of respondents per choice set was reasonable (up to 70 respondents), the number of respondents typically choosing a particular alternative was lower: a maximum of 15 respondents picked any particular alternative in a set. Hence, there may not have been enough respondents choosing target alternatives to reach significance for some findings. This is both a limitation and strength. Prior studies of set configuration effects have used several product categories and repeated choices to increase generalizability and statistical power of results (Hamilton et al. 2007; Huber et al. 1982; Simonson 1989). In those studies, product categories and repeated choices often needed to be combined to obtain significance of findings. In contrast, significant findings were obtained in the current study despite the small numbers of individuals choosing specific alternatives. Hence, the findings in the current study are nontrivial.

The next section describes a new experiment, Experiment 2, which is designed to address the lack of pre-choice task preference measurement through using a different type of experimental design that measures respondent preferences pre-manipulation and at an individual-level. These preferences are then used to model expected choices

and to compare observed choices with. This technique is expected to improve predictive accuracy relative to the proportional model used in Experiment 1. Experiment 2 also tests Hypothesis H_4; that asymmetric dominance-based secondary level set configuration effects will occur in complex choice.

4. EXPERIMENT 2

4.1. Purpose of the study

A limitation with the first experiment was that it relied on estimates from pretests to create alternatives and that preferences were not measured pre-choice task in the main experiment. Hence, it was not possible to control for the influence of individual respondent preferences on choice or to use these preferences to predict choice share. Instead, observed choice was compared with a proportional model (equal share) to test for set configuration effects. Experiment 2 is designed to improve on the choice model used in testing the set configuration effects predicted by hypotheses H_1 and H_2, as well as to test hypothesis H_4 regarding secondary level set configuration effects. A two-time period web-based experimental design is used to measure preferences prior to the choice task. Specifically, individual respondent preferences were elicited using conjoint analysis at time 1. These preferences were used to create stimuli used in the choice task conducted in a follow-up survey, approximately one week after the initial survey (time 2). A choice model based on individual preferences is then developed to compare observed choices with. This should be a better comparison than a proportional model (equal share) because it predicts choice based on respondents' individual preferences rather than on an average of all respondents' preferences. A new control condition is also introduced in this experiment. Creating a non-choice influencing control set configuration is difficult because it is plausible that any set configuration might influence choice. However, in this experiment a control was created including viable alternatives that were similar to the target alternative on the target attribute and were not dominated by the target alternative. This set configuration removes uniqueness and asymmetric dominance from the set.

4.2. Method

4.2.1. Participants and procedure

129 bachelor's students at a Norwegian college participated in two online surveys taking from 5 to 15 minutes each to complete. Initial and follow-up emails including a

link to the online survey were sent out to invite students to participate. In return for their participation in both surveys, respondents were eligible to win a portable audio player. Respondents were asked to imagine that they would be doing a semester abroad at a school in Australia and would need to decide on student housing. After this, the attributes used to describe student housing alternatives were explained to reduce potential confusion over attribute meanings. Respondent preferences were then measured using Adaptive Conjoint Analysis. Approximately one week later, another email and follow-up email were sent to respondents who had taken the first survey to inform them that they could now participate in the second survey. Respondents were then presented with alternatives and completed a choice task. Of the 129 respondents who completed the first survey, 117 (91%) returned to complete the second survey.

4.2.2. Design

Adaptive Conjoint Analysis (ACA) was used to measure pre-existing importances for each attribute and generate part-worth utilities for attributes at the individual respondent level.[36] ACA is a conjoint analysis technique that presents successive pairs of partially profiled alternatives and asks respondents to rate how strongly they prefer one alternative relative to another. ACA is better able to stabilize individual utility estimates with relatively smaller sample sizes as compared to other conjoint techniques and allows for the use of fewer questions. A Hierarchical Bayes estimation was used to calculate utilities for each individual respondent.[37] Although part-worth utilities were estimated at the individual level, the overall utilities for the alternatives presented in time 2 were based on an average for the whole group in order to make set configurations similar across respondents. In addition, ACA elicited attribute importances were used to determine the relative order of importance of the attributes. The sum of all attribute importances for a respondent is 1, with higher numbers for an attribute indicating greater importance. Based on the average for all respondents, price

[36] See Appendix 10.11 for a more complete overview of Adaptive Conjoint Analysis.
[37] Utilities can be estimated for a group (i.e. in aggregate) or for each individual respondent, depending on the estimation method. For example, Aggregate Logit and Latent Class estimations are often used to estimate part worths for groups, but they cannot be used to estimate part worths for individual respondents. In contrast, methods such as Hierarchical Bayes can be used to estimate part worths for each individual (Huber at al. 1999). For a more complete overview of the technique used in this experiment, see the Sawtooth Software Technical Papers Library, http://www.sawtoothsoftware.com.

(M_{price} = .300, *SE* = .006, *n* = 117) and distance ($M_{distance}$ = .300, *SE* = .007, *n* = 117) were the most-important attributes, followed by bathroom sharing ($M_{bathroom}$ = .221, *SE* = .008, *n* = 117) and then size (M_{size} = .179, *SE* = .005, *n* = 117). Following the conjoint analysis task, students were asked to indicate their minimum acceptable values on each of the 4 attributes (e.g. the maximum distance they would be willing to live from campus).

At time 2, respondents were presented with a choice set containing eight student apartment alternatives based on the average estimated path-worths from time 1. Due to the potential for poor screen resolution, eight alternatives were used in this experiment instead of nine, as in Experiment 1. Showing alternatives three across on a computer screen with low resolution, as some respondents might have used, looked poor. Displaying alternatives two across improved the appearance of the stimuli. Hence, alternatives were shown two across and four down on the computer screen (see appendix 10.7) The use of eight alternatives is still well within the criteria for complex choice tasks suggested by Payne's (1976) research (i.e. at least six alternatives varying on at least four attributes). The alternatives varied on four attributes; size, distance from campus, how many students share a bathroom with and monthly rental price; and were designed to be difficult to choose among (i.e. equal utility). Because set configuration effects tend to be strengthened by a need for justification, as observed in the previous experiment and in previous research (Simonson 1989), a need for justification was included in all conditions in the current experiment. This was done by informing respondents that they would be asked to explain their choice at the end of the survey.

Respondents were randomly assigned to one of three experimental conditions (uniqueness (UQ), asymmetric dominance (AD) and control (CT)). Target alternatives are at the most favorable level on the target attribute (most-important non-price attribute, or MINPA), whereas competitor alternatives are at the most favorable level on the competitor attribute (another important non-price attribute, or AINPA). The average overall price for alternatives was set to be equal across conditions and prices varied for alternatives such that no two alternatives shared the same price level. In the uniqueness (UQ) condition, there was only one target alternative in the choice set,

while there were three competitor alternatives. The competitor alternatives were equal in utility to each other, and varied in how favorable they were on the target attribute, MINPA (distance): $\text{COMPETITOR}_{\text{RH(Best)}}$ was the most favorable competitor on the target attribute (15 minutes from campus); $\text{COMPETITOR}_{\text{SH(Middle)}}$, was at an intermediate level (25 minutes from campus); and $\text{COMPETITOR}_{\text{BP(Worst)}}$, was the least favorable (35 minutes from campus). The competitor alternatives were the same across all three experimental conditions. In the asymmetric dominance (AD) condition, three alternatives were assigned the most favorable level on the target attribute (MINPA), of which two (decoys) were dominated by the third (the target). Once again, there were three competitor alternatives. Two alternatives in both the uniqueness and asymmetric dominance conditions were clearly inferior, leaving six viable alternatives for choice (i.e. equivalent in overall utilities and market share predictions). This allowed for alternatives that were closely dominated by a target alternative in the asymmetric dominance condition to be replaced with alternatives that were generally dominated by all options in the uniqueness condition without affecting the core set. In the control (CT) condition, there were three alternatives that were similar on the target attribute, including the target alternative, and three competitor alternatives, all approximately equal in utility. All eight alternatives in this choice set were viable (see Table 4-1 for an overview).

TABLE 4-1:
Experiment 2 conditions

Condition 1: Uniqueness (UQ)	**Code**	**Size (m^2)**	**Bath Sharing**	**Dist (min.)**	**Rent (kr.)**	**RFC Share Prediction**	**Utility**	**Notes**
Reading House	RH	10	0 students	15 by bus	4 150	*15,9 %*	*23*	*COMPETITOR*
Sturbridge House	SH	16	0 students	25 by bus	4 500	*10,6 %*	*29*	*COMPETITOR*
Beacon Place	BP	17	0 students	35 by bus	3 950	*13,6 %*	*22*	*COMPETITOR*
Hawthorn Tower	HT	13	2 students	Walking	4 100	*22,4 %*	*26*	*TARGET*
Arlington Tower	AT	18	3 students	25 by bus	4 200	*0,2 %*	*(36)*	
Waverley Place	WP	15	2 students	15 by bus	5 150	*2,7 %*	*(37)*	
Cowley Place	CP	20	3 students	15 by bus	3 400	*18,8 %*	*29*	
Headington House	HH	19	1 student	25 by bus	3 850	*15,8 %*	*31*	
Condition 2: Asymmetric Dominance (AD)	**Code**	**Size (m2)**	**Bath Sharing**	**Dist (min.)**	**Rent (kr.)**	**RFC Share Prediction**	**Utility**	**Notes**
Reading House	RH	10	0 students	15 by bus	4 150	*15,6 %*	*23*	*COMPETITOR*
Sturbridge House	SH	16	0 students	25 by bus	4 500	*9,7 %*	*29*	*COMPETITOR*
Beacon Place	BP	17	0 students	35 by bus	3 950	*13,2 %*	*22*	*COMPETITOR*
Hawthorn Tower	HT	13	2 students	Walking	4 100	*17,1 %*	*26*	*TARGET*
Devon Place	DP	13	2 students	Walking	5 150	*5,9 %*	*(9)*	*DECOY*
Fullerton Tower	FT	11	3 students	Walking	4 200	*5,5 %*	*(15)*	*DECOY*
Cowley Place	CP	20	3 students	15 by bus	3 400	*17,9 %*	*29*	
Headington House	HH	19	1 student	25 by bus	3 850	*15,1 %*	*31*	
Condition 3: Control (CT)	**Code**	**Size (m^2)**	**Bath Sharing**	**Dist (min.)**	**Rent (kr.)**	**RFC Share Prediction**	**Utility**	**Notes**
Reading House	RH	10	0 students	15 by bus	4 150	*15,7 %*	*23*	*COMPETITOR*
Sturbridge House	SH	16	0 students	25 by bus	4 500	*10,8 %*	*29*	*COMPETITOR*
Beacon Place	BP	17	0 students	35 by bus	3 950	*14,6 %*	*22*	*COMPETITOR*
Hawthorn Tower	HT	13	2 students	Walking	4 100	*10,8 %*	*26*	*TARGET*
Eastern Place	EP	18	2 students	Walking	5 150	*11,8 %*	*26*	*TARGET*
Campbell House	CH	17	3 students	Walking	4 200	*9,8 %*	*31*	*TARGET*
Cowley Place	CP	20	3 students	15	3 400	*12,4 %*	*29*	
Headington House	HH	19	1 students	25	3 850	*14,2 %*	*31*	

NOTE.–"Distance" is the target attribute (most-important non-price attribute, or MINPA) and "bathroom sharing" is the competitor attribute (another important non-price attribute, or AINPA). Utility levels in parentheses () are negative values.

Notation used to identify specific alternatives

Similar to Experiment 1, the following notation will be used. Alternatives will be described by text in small capitalization, subscript and parentheses. SMALL CAPS indicates a specific relationship of the alternative being identified to other related alternatives in a set. An alternative may be a TARGET, DECOY, COMPETITOR to the target or some OTHER non-relevant alternative. Given that all sets use the same target attribute in this experiment, the most-important non-price attribute (MINPA), it is not

necessary to specify the target attribute when identifying alternatives as was done in Experiment 1. Instead, text in $_{\text{SUBSCRIPT}}$ indicates the specific code given to an alternative rather than the target attribute. Text in parentheses supplies any additional information that helps identify the alternative in that set. For example, $\text{TARGET}_{\text{EP(Similar)}}$ indicates that the alternative is a target alternative in the set and that it is most favorable on the most-important non-price attribute (MINPA). "$_{\text{EP}}$" is the code that identifies the specific alternative and "$_{\text{(Similar)}}$" indicates that it is similar to other target alternatives on the target attribute in the set. This notation will continue to be used in all subsequent experiments.

4.3. Results

In Experiment 1, choice difficulty was measured as one way of checking that the set configurations were appropriate for testing the given hypotheses. The choice was found to not be easy for respondents in that experiment and set configuration effects were observed. Choice difficulty was measured again in Experiment 2 to check that the new experimental design had a similar ratings of choice difficulty compared with the previous experiment. The choice task appeared to not be easy for respondents ($M_{choice\ difficulty}$ = 4.60, SE = .14), as indicated by their responses on a 7-point Likert scale, ranging from 1, "very easy", to 7, "very difficult". Hence, the two designs resulted in a similar level of difficulty for respondents.[38]

4.3.1. Choice conformity with model predictions

In Experiment 1, observed choices were compared with equal proportion models to determine whether set configuration effects occurred in complex choice tasks. A limitation in the design was that preferences were not measured pre-choice task. The current experiment measures individual level preferences pre-choice task. This allows for a comparison of actual choices with predicted choices based on individual-level preferences. In the current experiment, actual choices were tested by condition versus

[38] In Experiment 1: $M_{choice\ difficulty}$ = 4.38, SE = .07

market share predicted by a Randomized First Choice (RFC) model.[39] An RFC model uses part-worth utilities elicited by conjoint analysis as a basis. This is the equivalent of a weighted additive compensatory choice strategy. The model is then adjusted to account for similarity by adding random error to attribute-level part-worths and overall product-level utilities (Huber, Orme, and Miller 1999; Orme and Baker 2000). This idea can be illustrated through the following example. Consumers may not always make the same choice every time. For instance, they may be in a hurry and simply grab the first item they see or their preferred item may be out-of-stock. Adding unique random variation to repeated point estimates of part-worths for each individual accounts for variation in respondents choices over time. Furthermore, adding a similar alternative to a choice set should not significantly increase choice share for the combined group of similar alternatives compared to other alternatives (Tversky 1972). Correlated random error (i.e. the same error term) is added to overall product utilities for similar alternatives in the RFC model account for this, whereas uncorrelated random error is added to non-similar alternatives.[40] The RFC model has been found to

[39] Sawtooth SSI Web software was used to create the surveys and its SMRT option to create RFC models. Even though RFC models are based on individual preferences, a limitation is that RFC models can only be run for choice share in aggregate. Individual preferences are the foundation for RFC models, but accounting for choice between similar alternatives adds a degree of aggregate data, as discussed in this section. Therefore, RFC model predictions are used as a baseline to compare aggregate choice share for alternatives against.

[40] The RFC model is defined by Orme and Baker (2000) as:

$$U_i = X_i (\beta + E_a) + E_p$$

where:

U_i = Utility of alternative i for an individual or homogenous segment at a moment in time
X_i = Row of design matrix associated with product i
β = Vector of part-worths
E_a = Variability added to the part-worths (same for all products in the set)
E_p = Variability (i.i.d Gumbel) added to product i (unique for each product in the set)

be a better predictor of choice share than using utility estimates alone (Huber et al. 1999).[41]

Because an ACA conjoint design had been used to elicit preferences in time 1, it was possible to predict the alternative that each individual should choose from the presented alternatives in time 2. To predict choices, RFC choice models were created for each choice set configuration and included only the alternatives and respondents from that specific choice set configuration in the model. Non-significant differences between model predictions and actual choices would suggest that the model was predicting choice well. A significant difference between choice share for an alternative and what was predicted would suggest that additional factors not included in the model were influencing choice of that alternative. In the current experiment, $\text{TARGET}_{\text{HT}}$ obtained greater share than predicted in the uniqueness, ($Choice_{\text{observed}}$ = 44%, vs., $Choice_{\text{predicted}}$ = 22%, n = 36, $p < .01$, *binomial test, one-tailed*), and asymmetric dominance conditions, ($Choice_{\text{observed}}$ = 35%, vs., $Choice_{\text{predicted}}$ = 17%, n = 37, $p < .01$, *binomial test, one-tailed*). This indicates that factors other than preferences influenced choice. Given that the increase in choice of $\text{TARGET}_{\text{HT}}$ was in the hypothesized direction, it appears that uniqueness and asymmetric dominance influenced choice in these complex choice tasks; as predicted by Hypotheses H_1 and H_2. With the exception of $\text{COMPETITOR}_{\text{BP}}$, Choice share for other alternatives was not significantly different than predicted by an RFC model in the uniqueness and asymmetric dominance conditions (see Table 4-2). Choice of $\text{COMPETITOR}_{\text{BP}}$ was lower than predicted in the uniqueness condition. However because very few respondents chose this alternative, it is difficult to assess why this occurred. It could be that this alternative was unacceptable to most respondents because it was the least favorable of all alternatives on an important attribute (i.e. distance; 35 min. by bus).

[41] Huber et al. (1999) conducted a study comparing a First Choice Model (i.e. a simple model that predicts consumers will choose the alternative with the highest utility) versus a Randomized Choice Model (i.e. a First Choice Model that adds random error to attribute-level part-worths and overall product-level utilities). The authors first used conjoint analysis to elicit preference data and then estimated part worth utilities using four commonly used methods (Aggregate Logit, Latent Class, Individual Choice Estimation and Hierarchical Bayes). For each of the four estimation methods, First Choice and Randomized First Choice model predictions were compared with actual choice share. The Randomized First Choice model was better able to predict choice among similar alternatives, as well as better able to predict choice in general, regardless of the utility estimation method.

TABLE 4-2:
Binomial comparison of actual choice share to (predicted share)

Condition	Alternative											
	TARGETS			*DECOYS*		*COMPETITORS*			*OTHERS*			
	HT	**CH**	**EP**	**DP**	**FT**	**BP**	**RH**	**SH**	**AT**	**CP**	**HH**	**WP**
1. UQ (*n* = 36)	.44 (.22)***	-	-	-	-	.03 (.14)***	.14 (.16)	.08 (.11)	.00 (.00)	.17 (.19)	.11 (.16)	.03 (.03)
2. AD (*n* = 37)	.35 (.17)***	-	-	.00 (.06)	.00 (.06)	.08 (.13)	.22 (.16)	.03 (.10)	-	.19 (.18)	.14 (.15)	-
3. CT (*n* = 44)	.23 (.11)**	.20 (.10)**	.02 (.12)**	-	-	.09 (.15)	.09 (.16)	.05 (.11)	-	.16 (.12)	.16 (.14)	-

NOTE.–The numbers in () indicate RFC model predictions of choice share for each individual alternative given each choice set that they were presented in. The other numbers are the observed choice share."UQ" = uniqueness, "AD" = asymmetric dominance and "CT" = control condition. Significance is calculated for observed choice of alternatives vs. model predictions at the levels indicated below.

*p<.1.

**p<.05.

***p<.01 (all binomial tests, one-tailed).

In the control condition, a significant difference between $\text{TARGET}_{\text{HT(similar)}}$ and the predicted share from an RFC model was found ($\textit{CHOICE}_{\text{OBSERVED}}$ = 23%, vs. $\textit{CHOICE}_{\text{PREDICTED}}$ = 11%, n = 44, p < .05, *binomial test, one-tailed*, see Table 4-2). However, a difference between expected and observed choice of the other target alternatives was also found ($\text{TARGET}_{\text{CH(similar)}}$, $\textit{CHOICE}_{\text{OBSERVED}}$ = 20%, vs. $\textit{CHOICE}_{\text{PREDICTED}}$ = 10%, n = 44, p < .05, *binomial test, one-tailed*; and $\text{TARGET}_{\text{EP(similar)}}$, $\textit{CHOICE}_{\text{OBSERVED}}$ = 2%, vs. $\textit{CHOICE}_{\text{PREDICTED}}$ = 12%, n = 44, p < .05, *binomial test, one-tailed*). There was a rather large price difference between the most expensive target and the other two target alternatives (950 to 1,050 NOK), which may have made the more expensive $\text{TARGET}_{\text{EP(similar)}}$ appear to be less attractive than the much cheaper $\text{TARGET}_{\text{CH(similar)}}$ or $\text{TARGET}_{\text{HT(similar)}}$. This could have led to an unpredicted shift in choice share between these three alternatives. At the same time, $\text{TARGET}_{\text{CH(similar)}}$ and $\text{TARGET}_{\text{HT(similar)}}$ received similar choice share. This is in line with the notion of substitutability, with $\text{TARGET}_{\text{HT(similar)}}$ and $\text{TARGET}_{\text{CH(similar)}}$ being seen as potential substitutes.

4.3.2. Secondary level set configuration effect

Hypothesis H_4 predicted a secondary level set configuration effect in complex choice tasks. Therefore, choice of the competitor alternative that was the most favorable of the competitors on the MINPA ($COMPETITOR_{RH(Best)}$) was examined. $COMPETITOR_{RH(Best)}$ ($\chi^2(1, n = 81) = 2.50$, $p < .1$, one-tailed) was the only alternative with higher choice in the asymmetric dominance condition relative to the control condition (see Table 4-3). The increased choice of $COMPETITOR_{RH(Best)}$ here suggests that a secondary level set configuration effect may have occurred; in support of Hypothesis H_4.[42]

TABLE 4-3:
Choice share for alternatives by condition

Condition	Alternative											
	TARGETS			***DECOYS***		***COMPETITORS***			***OTHERS***			
	HT[43]	**CH**	**EP**	**DP**	**FT**	**BP**	**RH**	**SH**	**AT**	**CP**	**HH**	**WP**
1. UQ (*n* = 36)	44.4%[b]					2.8%	13.9%	8.3%	0.0%	16.7%	11.1%	2.8%
2. AD (*n* = 37)	35.1%			0.0%	0.0%	8.1%	21.6%[a]	2.7%		18.9%	13.5%	
3. CT (*n* = 44)	22.7%[b]	20.5%	2.3%			9.1%	9.1%[a]	4.5%		15.9%	15.9%	

NOTE.–Choice share is only shown for alternatives included in each condition. "UQ" = unique, "AD" = asymmetric dominance and "CT" = control. Among the competitor alternatives, "RH" = $COMPETITOR_{RH(Best)}$, "SH" = $COMPETITOR_{SH(Middle)}$, and "BP" = $COMPETITOR_{BP(Worst)}$. All pairs with the same superscript letter are significantly different at the levels indicated below.

[a] $p<.1$.

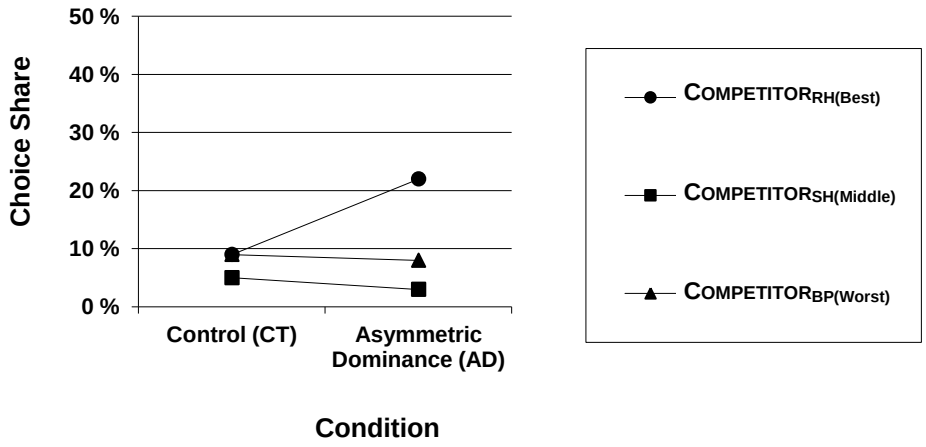
[b] $p<.05$ (all chi square tests, one-tailed).

[42] It could be argued that increased choice of $COMPETITOR_{RH(Best)}$ in the asymmetric dominance set is due to the presence of fewer viable alternatives in the set. There are eight viable alternatives in the control relative to six viable alternatives in the asymmetric dominance set. However, predicted share for $COMPETITOR_{RH(Best)}$ was 16% regardless of the number of viable alternatives in the set (see Table 4-2). Furthermore, choice share for $COMPETITOR_{RH(Best)}$ was significantly different between the control and asymmetric dominance conditions, whereas choice share for the other two competitors was the same between conditions. Hence, a difference in the number of viable alternatives between sets does not appear to explain the difference in choice of $COMPETITOR_{RH(Best)}$ between conditions.

[43] The significant decrease in choice of $TARGET_{HT}$ from the uniqueness to the control condition ($\chi^2(1, n = 80) = 4.26$, $p < .05$, one-tailed) is likely due to substitution (see Table 4-3). In the uniqueness condition, $TARGET_{HT}$ was the only MINPA alternative. In the control condition, it was one of three similar MINPA alternatives ($TARGET_{CH(similar)}$, $TARGET_{EP(similar)}$ and $TARGET_{HT(similar)}$). Combined choice share for all three MINPA alternatives in the control condition was 45.5% versus 44.4% for unique $TARGET_{HT}$ in the uniqueness condition. It is likely that the presence of the similar alternatives ($TARGET_{CH(similar)}$ and $TARGET_{EP(similar)}$) caused a substitution effect to occur in the control condition, taking share from $TARGET_{HT(similar)}$.

This secondary level set configuration effect may be easier to see when presented as shown in Figure 4-1. Figure 4-1 presents choice share for only competitor alternatives in asymmetric dominance and control set configurations. As discussed above, choice of $\text{COMPETITOR}_{\text{RH(Best)}}$ was higher in the asymmetric dominance condition than in the control (even though the same competitor alternatives were presented in both conditions).

FIGURE 4-1:
Choice of competitor alternatives between CT and AD sets



NOTE.– $\text{COMPETITOR}_{\text{RH(Best)}}$ was chosen more often in the Asymmetric Dominance condition relative to the Control condition ($\chi^2(1, n = 81) = 2.50$, $p < .1$, one-tailed). This suggests that a secondary level set configuration effect occurred. The competitor alternatives were equal in utility, and varied in how favorable they were on the target attribute, MINPA (distance): $\text{COMPETITOR}_{\text{RH(Best)}}$ was at the most favorable level on the MINPA of the competitor alternatives; $\text{COMPETITOR}_{\text{SH(Middle)}}$, was at a middle level on the MINPA; and $\text{COMPETITOR}_{\text{BP(Worst)}}$, was the least favorable of the competitors on the MINPA. There was no difference in choice of these alternatives in the Uniqueness condition vs. the other conditions.

It could be argued that choice of $\text{COMPETITOR}_{\text{RH(Best)}}$ was simply due respondents having preferences favoring that alternative because $\text{COMPETITOR}_{\text{RH(Best)}}$ is favorable on two important attributes; it is at the most favorable level on the competitor attribute (AINPA) and is relatively favorable on the target attribute (MINPA). Therefore, a binary logistic regression was run to control for the potential influence of a priori importance rankings of the MINPA (distance) and AINPA (bathroom sharing) attributes in examining the influence of set configuration on choice of

COMPETITOR$_{RH(Best)}$ (see Table 4-4). Including condition ("Condition", asymmetric dominance vs. control) and a priori bathroom sharing and distance importance rankings yielded a model that was a significant predictor of, $\chi^2(3, n = 81) = 17.70$, $p < .001$, and explained between 19.6% (Cox & Snell R Square) and 34.6% (Nagelkerke R Square) of variance in choice of COMPETITOR$_{RH(Best)}$. There was a significant influence of set configuration on choice of COMPETITOR$_{RH(Best)}$ after controlling for a priori preferences. These results further support Hypothesis H_4; that a secondary level set configuration effect can occur in complex choice tasks.

TABLE 4-4:
Regression predicting choice likelihood of COMPETITOR$_{RH(Best)}$

	B	S.E.	Wald	df	Significance	Odds Ratio	95,0% C.I. for Odds Ratio	
							Lower	*Upper*
Importance of distance	0.189	.084	5.011	1	.025	1.208	1.024	1.425
Importance of bathroom	0.305	.099	9.430	1	.002	1.356	1.117	1.647
Condition (AD vs. CT)	2.114	.885	5.703	1	.017	8.279	1.461	46.923
Constant	-3.591	.856	17.597	1	.000	.028		

NOTE.–"Importance of distance" = importance of the distance attribute, "Importance of bathroom" = importance of the bathroom sharing attribute, and "Condition" = asymmetric dominance vs. control. Model prediction significance: $\chi^2(3, n = 81) = 17.70$, $p < .001$, Cox & Snell R Square = 19.6%, Nagelkerke R Square = 34.6%.

4.4. Discussion

This experiment used ACA conjoint analysis to create complex choice sets and to measure preferences pre-choice task. Comparisons with a Randomized First Choice (RFC) model suggest that specific choice set configurations led to increased choice of target alternatives over what was predicted by a RFC model. In general, choice set configurations seem to have influenced choices at the primary level in complex choice tasks: choice of unique and dominating target alternatives was higher than predicted. An implication is that some respondents where choosing target alternatives even though they weren't the predicted choices for them and provides additional support for hypotheses H_1 and H_2. It could be argued, though, that higher than predicted

choice of the target alternative also in the control condition suggests that this target alternative is simply more attractive in general than predicted, regardless of set configuration. However, the relatively low choice share obtained by one of the other target alternatives in the control condition may be the reason for this. As highlighted in the results section, the similar target alternative that obtained lower share than predicted in the control condition may have been less attractive than the other two similar non-dominated target alternatives because it was considerably more expensive. A review of respondent ratings of favorability of each alternative supports this explanation. In the control condition, the least chosen Target alternative, $\text{TARGET}_{\text{EP(similar)}}$, was rated considerably less favorably ($\textit{Favorability}_{\text{EP}} = 2.57$, $n = 44$) on a scale from 1 ("not attractive") to 7 ("very attractive") by respondents choosing a Target alternative relative to the other Target alternatives, $\text{TARGET}_{\text{CH(similar)}}$ and $\text{TARGET}_{\text{HT(similar)}}$ ($\textit{Favorability}_{\text{CH}} = 3.91$, $t = -3.95$, $p < .001$; and $\textit{Favorability}_{\text{HT}} = 4.09$, $t = -4.02$, $p < .001$). Hence, the higher than expected choice of two of the three target alternatives may be due to choice share taken from the less attractive third target alternative rather than an overly favorable perception of the original target alternative.

Support for a secondary level set configuration effect

Choice of the competitor alternative that was most favorable on the target attribute was higher in the asymmetric dominance condition than in the control. Hence, the preliminary secondary level effect finding from Experiment 1, set up formally as Hypothesis H_4, was supported in this experiment. In the asymmetric dominance condition, some respondents may have screened alternatives on the competitor attribute first. Noticing the target and decoy alternatives and the dominance relationship among them could have led to the detection of a good alternative, the target alternative. These respondents could then have compared the target alternative with their considered alternatives (competitor alternatives) and perceived being less favorable on the target attribute to represent a loss relative to the good (target) alternative. A desire to minimize this loss might have led to choice of the competitor alternative with the most favorable level on the target attribute.

An alternative explanation for this secondary level effect is that having to trade-off one important attribute for another (a negative correlation between the target and competitor attributes in the design of alternatives) led to increased choice of a compromise alternative; in this case the competitor alternative with the most favorable level on the target attribute. How favorable each alternative is on the target and competitor attributes is negatively correlated in the asymmetric dominance condition, $r = -.72$, $n = 8$, $p < .05$. Accordingly, respondents may have perceived the choice task to be a relatively simpler trade-off of the target and competitor attributes, whether or not they had a preference for competitor alternatives. Hence, the increase in choice of the competitor alternative with the most favorable level on the target attribute could be attributable to a compromise that minimized the trade-off between the target and competitor attributes and not necessarily to the presence of asymmetric dominance. For this argument to be true, there would need to be a lesser correlation between the target and competitor attributes in the control condition where the secondary level effect did not occur. However, the correlation between target and competitor attributes was, by design, identical in the control and asymmetric dominance conditions. Thus, correlation between attributes as a driver for the secondary level effect can be ruled out.[44] Hence, the secondary level effect appears to be attributable to set configuration and not a negative correlation among important attributes.

Complexity and involvement

Although the experiments in this study so far have investigated set configuration effects in complex choice tasks, a main effect of simple vs. complex choice tasks has not yet been explicitly tested. Therefore, the next experiment manipulates complexity of the choice task as a means to further explore the primary and secondary level set configuration effects observed in this study. Bettman et al. (1998) note that increased choice complexity should lead to greater reliance on noncompensatory choice strategies and a lesser influence of set configurations, such as asymmetric dominance, on choice. If true, a stronger main effect of asymmetric dominance should be observed in choice tasks including few alternatives relative to many alternatives. Also,

[44] Even if respondents detected the trade-off more readily in the asymmetric dominance condition, it is likely that the dominance relationship is what made the trade-off more noticeable and was, hence, still responsible for the observed secondary level effect.

it is expected that secondary level effects will disappear in simple choice tasks. As there are fewer competing alternatives, it should be easier for respondents using prior preferences to determine their optimal alternative without relying on information found in set configurations.

The influence of product involvement will also be tested on set configuration effects. Involvement has been shown to influence the amount of information processing consumers engage in (Petty, Cacioppo, and Schumann 1983). Higher involvement can lead to more effortful processing, consistency in choices and a reduction in the influence of asymmetric dominance (Mishra, Umesh, and Stem 1993). Mishra et al (1993) argued that a respondent who is not interested in the task will not make the effort to make a good choice and that this lack of effort increases the probability of attraction effects. The authors of that study used three product categories that varied on product involvement and tested task involvement using a structural equation model. Results from their study led the authors to conclude that higher task involvement leads to lower probability of attraction effects. It is not a far leap to suggest that using a low involving product in a task would lead to low involvement in the task; implying that an attraction effect is more likely to occur among low involving products relative to high involving. It has also been suggested that the ability of salience to bias evaluations of alternatives increases when motivation to process information about alternatives is low relative to high (Borgida and Howard-Pitney 1983; Sanbonmatsu et al. 1994). In a study by Borgida and Howard-Pitney (1983), involvement was measured as the personal importance/relevance of a topic being discussed. Salience was manipulated by making a particular person in a discussion, or *discussant*, visible (not visible). Salience was found to increase liking of the discussant in a low involvement condition, but had no effect in a high involvement condition. An implication of the studies discussed above is that involvement can moderate the influence of salient alternatives on choice. With regard to the current study, this can be interpreted to suggest that the configuration of choice sets may influence choice to a greater degree in low involving decisions versus highly involving decisions. The next experiment, Experiment 3, will test for the influence of task complexity and involvement on the set configuration effects observed in Experiments 1 and 2.

5. EXPERIMENT 3

5.1. Purpose of the study

Experiment 3 is designed to test primary and secondary level set configuration effects in complex versus simple choice tasks and the influence of involvement on these choices.

5.2. Method

5.2.1. Participants and procedure

190 Norwegian higher education students from an established consumer panel participated in two online surveys. Student housing was used as one of two settings (discussed below), so respondents were required to be students. 138 (73%) of the 190 respondents who completed the first survey also completed the second survey. The age of respondents ranged from 17 to 27, with an average age of 21.6. 68% of respondents were women. Similar to the previous experiment, preferences were elicited using conjoint analysis approximately one week before the choice task was conducted. To manipulate complexity, four option choice set configuration conditions (*Simple*) were tested against eight option (*Complex*) conditions. Secondary level set configuration effects were only observed in the asymmetric dominance conditions in prior experiments, so asymmetric dominance was the focus of this experiment. In both simple and complex choices, the choice set configuration manipulation was asymmetric dominance (*AD*) X control (*Control*). Respondents were informed that they would be asked to justify their choice at the end of the survey, which was followed up with a question at the end of the survey asking them to explain their choice.

5.2.2. Design

Dominance of target alternatives was created through the use of one and two decoys in the choice sets in the complex conditions and one decoy in the set in the simple

conditions. The use of one decoy in both simple and complex conditions created a direct comparison, with one decoy used to create dominance in both cases. The use of two decoys in the complex condition was proportionally similar to the simple condition, with decoys accounting for 25% of the alternatives in both cases. The dominance by complexity manipulations resulted in a task complexity (simple vs. complex) X set configuration (control vs. one asymmetrically dominated decoy vs. two asymmetrically dominated decoys) between-subjects design, resulting in five experimental choice set configurations. In addition to complexity, involvement was tested. Two product categories were presented within subjects; student housing as before, and microwave ovens. Student housing was expected to be a high involvement category, whereas microwaves was expected to be a low involvement category. As in experiment 2, student preferences were first measured using an online ACA conjoint analysis technique in time 1. These preference measures were used to create housing and microwave alternatives and develop RFC (Randomized First Choice) models. For an overview of choice set configurations, see Table 5-1 for high involvement and Table 5-2 for low involvement conditions.

Housing options varied on four attributes; size, distance from campus, how many students share a bathroom and rental price. Price was the most important attribute (M_{price} = .311, *SE* = .007, *n* = 138). Distance ($M_{distance}$ = .255, *SE* = .006, *n* = 138) and bathroom sharing ($M_{bathroom}$ = .246, *SE* = .007, *n* = 138) were found to be the most-important non-price attributes, followed by size (M_{size} = .187, *SE* = .005, *n* = 138).[45] The target attribute in high involvement conditions (housing) was the most-important non-price attribute, or MINPA (distance) and the competitor attribute was another important non-price attribute, or AINPA (bathroom sharing). Target alternatives were assigned the most favorable level of all alternatives on the target attribute, whereas competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute: $\text{COMPETITOR}_{RH(Best)}$ was the most favorable competitor on the target attribute (15 minutes from campus); and $\text{COMPETITOR}_{BP(Worst)}$, was the least favorable competitor on the target attribute (35 minutes from campus). There were only two competitor alternatives in all sets in this experiment, whereas three similar

[45] A higher number indicates increased importance. Attribute importances are relative to each other and sum to 1.

competitors were presented in the prior experiments in this study. The use of two competitor alternatives in Experiment 3 was meant to maintain consistency between simple and complex choice tasks. Simple tasks included only four alternatives, of which two were similar targets or a target and decoy. Hence, only two competitor alternatives could be included. This was also the case for similar target alternatives in control conditions (two similar targets) and applies to both the high and low involvement conditions

Microwave ovens varied on power (watts), size (liters), brand and price. A review of several online electronics stores indicated that these were important attributes and suggested a range of typical values on these attributes. At the same time, these attributes fit the design of the experiment because they are easy to understand and the attribute levels can be varied. Price was the most important attribute (M_{price} = .395, *SE* = .008, *n* = 138). Power (M_{power} = .254, *SE* = .006, *n* = 138) was found to be the most-important non-price attribute, followed by size (M_{size} = .205, *SE* = .005, *n* = 138) and brand (M_{brand} = .146, *SE* = .008, *n* = 138). Whirlpool was the preferred of the three brands used in the experiment, followed by Kenwood and then LG. Target alternatives were assigned the most favorable level of all alternatives on the target attribute (power) and competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute (brand):[46] $\text{COMPETITOR}_{D(Best)}$ was the most favorable competitor on the target attribute (800 watts); and $\text{COMPETITOR}_{A(Worst)}$, was the least favorable competitor on the target attribute (600 watts).

[46] Secondary level effects are unlikely to occur if respondents have preferences that simplify choice between competitor alternatives. Whereas the required size of a microwave might be difficult for a respondent to determine, it is conceivable that deciding between competitors using brand preferences could be easier. For example, a respondent might not know if an 18 liter microwave is big enough for their needs, or if they need 22 liters, but they might generally prefer Brand A to Brand B. Hence, brand was chosen as the competitor attribute (i.e. competitor alternatives shared the same brand) to remove respondents' ability to use brand preference to decide among competitor alternatives.

TABLE 5-1:
Experiment 3: High involvement conditions

	Set 1: Complex Control	Code	Size (m^2)	Bath Sharing	Dist (min.)	Rent (kr.)	Share Prediction	Utility	Notes
COMPLEX	Arlington Tower	AT	17	2	15	kr 3 450	5 %	31	
	Beacon Place	BP	16	0	35	kr 3 900	18 %	27	COMPETITOR
	Cowley Place	CP	19	3	0	kr 4 250	19 %	26	TARGET
	Headington House	HH	20	2	25	kr 3 150	12 %	33	
	Hawthorn Tower	HT	12	1	0	kr 4 200	18 %	34	TARGET
	Reading House	RH	11	0	15	kr 4 050	17 %	33	COMPETITOR
	Sturbridge House	SH	19	1	20	kr 4 300	12 %	31	
	Waverley Place	WP	13	3	35	kr 4 450	0 %	(112)	
	Set 2: Complex AD 1	**Code**	**Size (m^2)**	**Bath Sharing**	**Dist (min.)**	**Rent (kr.)**	**Share Prediction**	**Utility**	**Notes**
	Arlington Tower	AT	17	2	15	kr 3 450	7 %	31	
	Beacon Place	BP	16	0	35	kr 3 900	20 %	27	COMPETITOR
	Cowley Place	CP	11	3	0	kr 4 250	6 %	(33)	DECOY
	Headington House	HH	20	2	25	kr 3 150	16 %	33	
	Hawthorn Tower	HT	12	1	0	kr 4 200	20 %	34	TARGET
	Reading House	RH	11	0	15	kr 4 050	18 %	33	COMPETITOR
	Sturbridge House	SH	19	1	20	kr 4 300	13 %	31	
	Waverley Place	WP	13	3	35	kr 4 450	0 %	(112)	
	Set 3: Complex AD 2	**Code**	**Size (m^2)**	**Bath Sharing**	**Dist (min.)**	**Rent (kr.)**	**Share Prediction**	**Utility**	**Notes**
	Arlington Tower	AT	17	2	15	kr 3 450	6 %	31	
	Beacon Place	BP	16	0	35	kr 3 900	20 %	27	COMPETITOR
	Cowley Place	CP	11	3	0	kr 4 250	4 %	(33)	DECOY
	Headington House	HH	20	2	25	kr 3 150	16 %	33	
	Hawthorn Tower	HT	12	1	0	kr 4 200	20 %	34	TARGET
	Reading House	RH	11	0	15	kr 4 050	18 %	33	COMPETITOR
	Sturbridge House	SH	19	1	20	kr 4 300	13 %	31	
	Waverley Place	WP	13	3	0	kr 4 450	4 %	(23)	DECOY
SIMPLE	**Set 4: Simple Control**	**Code**	**Size (m^2)**	**Bath Sharing**	**Dist (min.)**	**Rent (kr.)**	**Share Prediction**	**Utility**	**Notes**
	Beacon Place	BP	16	0	35	kr 3 900	25%	27	COMPETITOR
	Cowley Place	CP	19	3	0	kr 4 250	27%	26	TARGET
	Hawthorn Tower	HT	12	1	0	kr 4 200	25%	34	TARGET
	Reading House	RH	11	0	15	kr 4 050	24%	33	COMPETITOR
	Set 5: Simple AD	**Code**	**Size (m^2)**	**Bath Sharing**	**Dist (min.)**	**Rent (kr.)**	**Share Prediction**	**Utility**	**Notes**
	Beacon Place	BP	16	0	35	kr 3 900	31%	27	COMPETITOR
	Cowley Place	CP	11	3	0	kr 4 250	9%	(33)	DECOY
	Hawthorn Tower	HT	12	1	0	kr 4 200	33%	34	TARGET
	Reading House	RH	11	0	15	kr 4 050	27%	33	COMPETITOR

NOTE.–"Target" = asymmetric dominance target alternative, and "Decoy" = decoy alternative that is dominated by the AD Target. Share predictions are based on a Randomized First Choice (RFC) model. "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Utility levels in parentheses () are negative values.

TABLE 5-2:
Experiment 3: Low involvement conditions

	Set 1: Complex Control	Size (liters)	Power (watts)	Brand	Price	Share Prediction	Utility	Notes
COMPLEX	A	24	600	Whirlpool	kr 1 300	16 %	31	COMPETITOR
	B	22	1000	LG	kr 1 650	17 %	29	TARGET
	C	21	1000	Kenwood	kr 1 700	16 %	31	TARGET
	D	18	800	Whirlpool	kr 1 350	15 %	33	COMPETITOR
	E	22	700	Whirlpool	kr 1 400	4 %	30	
	F	23	650	Kenwood	kr 1 250	12 %	31	
	G	19	750	LG	kr 1 150	16 %	25	
	H	17	800	Kenwood	kr 1 850	4 %	(74)	
	Set 2: Complex AD 1	**Size**	**Power**	**Brand**	**Price**	**Share Prediction**	**Utility**	**Notes**
	A	24	600	Whirlpool	kr 1 300	17 %	31	COMPETITOR
	B	15	1000	LG	kr 1 650	11 %	(31)	DECOY
	C	21	1000	Kenwood	kr 1 700	19 %	31	TARGET
	D	18	800	Whirlpool	kr 1 350	14 %	33	COMPETITOR
	E	22	700	Whirlpool	kr 1 400	5 %	30	
	F	23	650	Kenwood	kr 1 250	12 %	31	
	G	19	750	LG	kr 1 150	18 %	25	
	H	17	800	Kenwood	kr 1 850	4 %	(74)	
	Set 3: Complex AD 2	**Size**	**Power**	**Brand**	**Price**	**Share Prediction**	**Utility**	**Notes**
	A	24	600	Whirlpool	kr 1 300	17 %	24	COMPETITOR
	B	15	1000	LG	kr 1 650	10 %	15	DECOY
	C	21	1000	Kenwood	kr 1 700	17 %	21	TARGET
	D	18	800	Whirlpool	kr 1 350	15 %	18	COMPETITOR
	E	22	700	Whirlpool	kr 1 400	5 %	22	
	F	23	650	Kenwood	kr 1 250	12 %	23	
	G	19	750	LG	kr 1 150	18 %	19	
	H	17	1000	Kenwood	kr 1 850	6 %	17	DECOY
SIMPLE	**Set 4: Simple Control**	**Size**	**Power**	**Brand**	**Price**	**Share Prediction**	**Utility**	**Notes**
	A	24	600	Whirlpool	kr 1 300	26%	31	COMPETITOR
	B	22	1000	LG	kr 1 650	24%	29	TARGET
	C	21	1000	Kenwood	kr 1 700	24%	31	TARGET
	D	18	800	Whirlpool	kr 1 350	26%	33	COMPETITOR
	Set 5: Simple AD	**Size**	**Power**	**Brand**	**Price**	**Share Prediction**	**Utility**	**Notes**
	A	24	600	Whirlpool	kr 1 300	29%	24	COMPETITOR
	B	15	1000	LG	kr 1 650	16%	15	DECOY
	C	21	1000	Kenwood	kr 1 700	30%	21	TARGET
	D	18	800	Whirlpool	kr 1 350	26%	18	COMPETITOR

NOTE.–"Target" = asymmetric dominance target alternative, and "Decoy" = decoy alternative that is dominated by the AD Target. Share predictions are based on a Randomized First Choice (RFC) model. "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Utility levels in parentheses () are negative values.

5.3. Results

Involvement and choice difficulty

To properly test involvement as a moderator of secondary level set configuration effects, it was important that the product categories used in this experiment vary on involvement. Ratings of involvement were found to be higher in the high involvement (housing) conditions, ($M_{housing}$ = 5.66, n = 138) relative to the low involvement (microwave oven) conditions, ($M_{microwave}$ = 3.21, n = 138, t = 12.86, p < .001), on a 7-point Likert scale.

Choice difficulty has been measured in the prior experiments in this thesis as one check that conditions were conducive to set configuration effects. In the current experiment, however, choice difficulty was also measured to check if respondents would find a complex task (higher number of alternatives in the set) to be more difficult to process than a simple task (low number of alternatives). No main effect of task complexity on choice difficulty was found (*Choice difficulty*$_{complex}$ = 3.80, n = 158, *Choice difficulty*$_{simple}$ = 3.57, n = 118, t = 1.16, p > .1). Choice difficulty was also not significantly different between the high involvement complex versus simple condition, ($M_{complex}$ = 3.85, n = 84, M_{simple} = 3.37, n = 54, t = 1.63, p > .1), or the low involvement complex versus simple condition, ($M_{complex}$ = 3.76, n = 74, M_{simple} = 3.73, n = 64, t = 0.08, p > .1). Hence, task complexity was not associated with choice difficulty in this experiment.

5.3.1. Effects in high involvement choice tasks

High involvement, complex choice tasks

Actual vs. predicted share. As in the prior experiment, observed choices were compared with Randomized First Choice (RFC) model predictions (see Table 5-3). A difference between predicted and observed choice of an alternative might suggest that factors outside the model, such as the configuration of the set, influenced choice. In the high involvement (housing) conditions, the target alternative was not chosen more often than predicted by an RFC model in any single set. However, combing the

asymmetric dominance with one decoy and asymmetric dominance with two decoys sets suggests support for an attraction effect ($CHOICE_{OBSERVED}$ = 30%, vs. $CHOICE_{PREDICTED}$ = 20%, n = 56, $p < .1$, *binomial test, one-tailed*). Although this is a weak finding, it suggests that asymmetric dominance may have influenced choice of the target in this experiment.

TABLE 5-3:
Observed choice verses (predicted choice) in high involvement sets

Choice set	Alternative							
	TARGET	*DECOY/ TARGET*	*DECOY/ OTHER*	*COMPETITORS*		*OTHERS*		
	HT	**CP**	**WP**	**RH**	**BP**	**AT**	**HH**	**SH**
Complex Control (*n = 28*)	.18(.18)	.21(.19) (*Target*)	.00(.00) (*Other*)	.07(.17)	.14(.18)	.18(.05)**	.21(.12)	.00(.12)**
Complex AD 1 (*n = 34*)	.30(.20)	.03(.06) (*Decoy*)	.00(.00) (*Other*)	.15(.18)	.15(.20)	.18(.07)**	.21(.16)	.00(.13)***
Complex AD 2 (*n = 22*)	.27(.20)	.00(.04) (*Decoy*)	.00(.04) (*Decoy*)	.14(.18)	.23(.20)	.23(.06)***	.09(.16)	.05(.13)
Simple Control (*n = 18*)	.33(.25)	.11(.27) (*Target*)	-	.22(.24)	.33(.25)	-	-	-
Simple AD (*n = 35*)	.40(.33)	.00(.09)** (*Decoy*)	-	.23(.27)	.37(.31)	-	-	-

NOTE.–Numbers in () indicate RFC model predictions of choice share for each alternative given the set they were presented in. Model predictions for each choice set are based on only those respondents who received that specific choice set. The other numbers are observed choice share. Share percentages may not total to 1 in some instances due to rounding. "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternative "RH" = $COMPETITOR_{RH(Best)}$ and "BP" = $COMPETITOR_{BP(Worst)}$. Alternative CP was used as a similar Target in some conditions and changed to a Decoy in other conditions. WP was used as an Other alternative in some conditions and changed to a Decoy in other conditions. Whether CP or WP was a Target, Decoy or Other alternative in a set is indicated where choice share is presented. Significance is calculated for observed choice of alternatives vs. model predictions at the levels indicated below.

*p<.1.

**p<.05.

***p<.01 (all binomial tests, one-tailed).

Another alternative, OTHER_{AT}, was also chosen more often than predicted by a RFC model in the high involvement (student housing) conditions.[47] This suggests that some respondents were choosing OTHER_{AT} even though it was not the optimal alternative for them, given their prior preferences. However, this difference was similar in the control and test conditions, suggesting that set configuration was not the cause of the difference between observed and expected choice of OTHER_{AT}. Further analysis suggests that the significant result vis-à-vis the model for OTHER_{AT} in the complex task conditions may be due to price sensitivity. OTHER_{AT} was the second cheapest alternative[48] and occupied the second most favorable level on the target attribute (distance; 15 minutes from campus). A binary logistic regression based on utility for OTHER_{AT} produced a model that was a significant predictor of choice of OTHER_{AT}, $\chi^2(1, n = 84) = 11.20$, $p < .001$, and explained between 12.5% and 20.0% of the variance in choice (see Table 5-4). It is reasonable that choice of OTHER_{AT} is associated with individual utility levels for the alternative because many of those who should have chosen OTHER_{AT}, given their preferences, did choose it. What is important is to try to explain why additional respondents chose this alternative. Adding choice set configuration to the model did not improve significance or explanatory power ($\chi^2(2, n = 84) = 11.45$, $p < .01$, Cox & Snell R Square = 12.7%, Nagelkerke R Square = 20.5%). Although the reason for why OTHER_{AT} was generally chosen more often than predicted in complex conditions remains unclear, it does seem that choice of OTHER_{AT} was at least not influenced by choice set configuration.

[47] OTHER_{SH} was chosen less often than predicted. Because no or few respondents chose this alternative in each condition, it is not possible to run an analysis based on preferences to explore why this alternative was not chosen. However, OTHER_{SH} was not most favorable on any attribute and was the most expensive alternative outside of one of the decoys. It may be that respondents avoided this alternative because of its relatively high price.

[48] Alternative OTHER_{HH} was the cheapest alternative, but was poorer on the target attribute (i.e. further from campus).

TABLE 5-4:
Regression predicting choice likelihood of $OTHER_{AT}$

	B	S.E.	Wald	df	Significance	Odds Ratio	95,0% C.I. for Odds Ratio	
							Lower	*Upper*
Utility $OTHER_{AT}$	.070	.024	8.875	1	.003	1.073	1.024	1.124
Constant	-1.768	.351	25.419	1	.000	.171		

NOTE.– "Utility $OTHER_{AT}$" is the overall utility for alternative $OTHER_{AT}$. Model prediction significance: $\chi^2(1, n = 84) = 11.20$, $p < .01$, Cox & Snell R Square = 12.5%, Nagelkerke R Square = 20.0%.

Secondary level set configuration effect. A comparison of choice of each alternative between complex task set configurations revealed no significant differences (see Table 5-5).[49] However, there was an indication that a secondary level set configuration effect occurred. Although not significant in a chi square test, an increase in choice of $COMPETITOR_{RH(Best)}$ was found to be associated with the asymmetric dominance sets (Complex AD 1 and Complex AD 2) versus the control, $r_{pb} = .16$, $n = 84$, $p < .1$.[50] This lends further, although weak, support for H_4; that secondary level set configuration effects can occur in complex choice tasks.

[49] $DECOY_{CP}$, was a decoy alternative in the asymmetric dominance condition and should not have been chosen by design. However, it was a viable alternative in the control condition and was likely to be chosen by some in that condition. Hence, it is not appropriate to compare choice of $DECOY_{CP}$ between the control and asymmetric dominance conditions.

[50] One outlier was excluded for analysis for choosing an alternative that exceeded their attribute level cut-off values on their first and third most important attributes (price and size).

TABLE 5-5:
Choice share in high involvement conditions by set configuration

Choice set	Alternative							
	TARGET	*DECOY/ TARGET*	*DECOY/ OTHER*	*COMPETITORS*		*OTHERS*		
	HT	**CP**	**WP**	**RH**	**BP**	**AT**	**HH**	**SH**
Complex Control (*n = 28*)	17.9%	21.4% (*Target*)	0.0% (*Other*)	7.1%	14.3%	17.9%	21.4%	0.0%
Complex AD 1 (*n = 34*)	29.4%	2.9% (*Decoy*)	0.0% (*Other*)	14.7%	14.7%	17.6%	20.6%	0.0%
Complex AD 2 (*n = 22*)	27.3%	0.0% (*Decoy*)	0.0% (*Decoy*)	13.6%	22.7%	22.7%	9.1%	4.5%
Simple Control (*n = 18*)	33.3%	11.1% (*Target*)	-	22.2%	33.3%	-	-	-
Simple AD (*n = 35*)	40.0%	0.0% (*Decoy*)	-	22.9%	37.1%	-	-	-

NOTE.–Choice share is only shown for alternatives included in each specific choice set configuration. "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternative "RH" = $\text{COMPETITOR}_{\text{RH(Best)}}$ and "BP" = $\text{COMPETITOR}_{\text{BP(Worst)}}$. Alternative CP was used as a Target in some conditions and changed to be a Decoy in other conditions. WP was used as an Other alternative in some conditions and changed to a Decoy in other conditions. Whether CP or WP was a Target, Decoy or Other alternative in a set is indicated where choice share is presented. Choice of CP and WP cannot be compared when they are targets/other in one set and decoy alternatives in another set because decoys are designed to not be chosen. Choice of alternatives was not significantly different between any two sets.

High involvement, simple choice tasks

No alternative was chosen more or less often than predicted by an RFC model in the high involvement, simple choice task conditions, except for lower than expected choice of DECOY_{CP}, which was designed to not be chosen, in the asymmetric dominance condition (see Table 5-3).[51] Choice of alternatives also did not vary between sets. One interpretation of these results is that respondents choose the alternative that was optimal for them, given their preferences. To determine if individual respondents were choosing alternatives that were among the most optimal

[51] DECOY_{CP} was designed to not be chosen (i.e. it was a decoy alternative). However, the model predicts that a few respondents would choose it. It was not possible to run an analysis based on preferences to explore why DECOY_{CP} was chosen less than predicted in the asymmetric dominance condition because no respondents chose it.

for them, observed choices were compared with overall product utilities. Choice of each alternative was correlated with individual respondent-level utility estimates for that alternative (summed utilities for each attribute for an alternative; $\text{COMPETITOR}_{\text{BP(Worst)}}$: $r_{pb} = .43$, $n = 53$, $p < .001$, $\text{TARGET}_{\text{CP}}$: $r_{pb} = .44$, $n = 18$,[52] $p < .05$, $\text{TARGET}_{\text{HT}}$: $r_{pb} = .37$, $n = 53$, $p < .01$, $\text{COMPETITOR}_{\text{RH(Best)}}$: $r_{pb} = .24$, $n = 53$, $p < .05$, *one-tailed*). The correlation between choice of alternatives and their estimated utilities and lack of a difference in choice of alternatives across sets suggests that consumers may have used compensatory strategies in the high involvement, simple task.

5.3.2. Effects in low involvement choice tasks

Low involvement, complex choice tasks

Two alternatives in the low involvement (microwave oven) complex task, TARGET_{C} and $\text{OTHER}_{\text{G(cheapest)}}$, achieved significantly different share than predicted by an RFC model (see Table 5-6). This might suggest at first that set configurations may have influenced choice of these alternatives. Furthermore, choices of all alternatives[53] in the complex conditions were found to be associated with their overall utilities, except for TARGET_{C} ($r_{pb} = .14$, $n = 74$, $p > .1$, *one-tailed*) and $\text{OTHER}_{\text{G(cheapest)}}$ ($r_{pb} = .01$, $n = 74$, $p > .1$, *one-tailed*). In other words, a respondent was more likely to choose an alternative when their preferences favored it, with the exception of TARGET_{C} and $\text{OTHER}_{\text{G(cheapest)}}$. The following sections will elaborate on choice of these two alternatives.

[52] Correlation between choice of alternative CP and utility estimates for CP could only be checked in the control condition, as CP was a non-chosen Decoy in the asymmetric dominance condition.
[53] Alternatives E and H were chosen only once or not at all. Hence, correlation with their utilities could not be checked.

TABLE 5-6:
Observed choice verses (predicted choice) in low involvement sets

Choice set	Alternative							
	TARGET	*DECOY/ TARGET*	*DECOY/ OTHER*	*COMPETITORS*		*OTHERS*		
	C	B	H	D	A	E	F	G
Complex Control (*n = 19*)	.00(.16)**	.16(.17) (*Target*)	.00(.06) (*Other*)	.26(.15)	.11(.16)	.00(.05)	.11(.12)	.37(.18)**
Complex AD 1 (*n = 23*)	.04(.19)**	.04(.11) (*Decoy*)	.00(.04) (*Other*)	.09(.14)	.22(.17)	.04(.05)	.13(.12)	.44(.18)***
Complex AD 2 (*n = 32*)	.13(.17)	.06(.10) (*Decoy*)	.00(.06) (*Decoy*)	.19(.15)	.06(.17)*	.00(.05)	.19(.12)	.38(.18)***
Simple Control (*n = 27*)	.04(.24)***	.30(.28) (*Target*)	-	.22(.26)	.44(.25)**	-	-	-
Simple AD (*n = 37*)	.05(.30)***	.14(.16) (*Decoy*)	-	.46(.26)***	.35(.29)	-	-	-

NOTE.–Numbers in () indicate RFC model predictions of choice share for each alternative given the set they were presented in. Model predictions for each choice set are based on only those respondents who received that specific choice set. The other numbers are observed choice share. Share percentages may not total to 1 in some instances due to rounding. "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys, and "AD" = asymmetric dominance (see Table 5-2 for a full overview of experimental conditions). Alternative "D" = $\text{COMPETITOR}_{D(Best)}$ and "A" = $\text{COMPETITOR}_{A(Worst)}$. Alternative B was used as a Target in some conditions and changed to be a Decoy in other conditions. H was used as an Other alternative in some conditions and changed to a Decoy in other conditions. Whether B or H was a Target, Decoy or Other alternative in a set is indicated where choice share is presented. Significance is calculated for observed choice of alternatives vs. model predictions at the levels indicated below.

*p<.1.

**p<.05.

***p< .01 (all binomial tests, one-tailed).

An attraction effect?- TARGET_C was more likely to be chosen in the low involvement, high task complexity asymmetric dominance with two decoys set relative to the control (see Table 5-7), suggesting an attraction effect occurred.[54] However, TARGET_C was not chosen more often than predicted by a RFC model (see Table 5-6), suggesting an attraction effect did not occur. This contradiction may be due to substitution. In the complex control there were two equal utility target alternatives, TARGET_C and TARGET_B. TARGET_C was not chosen, whereas TARGET_B had a choice share of 16%. In

[54] The asymmetric dominance condition with two decoys was also the only complex task condition in which the target did not achieve lower than predicted choice share (see Table 5-6).

the asymmetric dominance with two decoys condition, there was only one target, TARGET_C. Here, the target, TARGET_C, had 13% share. Hence, it seems probable that TARGET_C merely received the choice share that TARGET_B had when it was present in the set. Hence, a difference in choice of TARGET_C between sets seems to be explained by substitution and not an attraction effect. Why TARGET_C was chosen less than expected in the control and asymmetric dominance with one decoy conditions was difficult to answer because only one person chose this alternative.

TABLE 5-7:
Choice of alternatives in low involvement complex task conditions

Choice set	Alternative							
	TARGET	***DECOY/ TARGET***	***DECOY/ OTHER***	***COMPETITORS***		***OTHERS***		
	C	**B**	**H**	**D**	**A**	**E**	**F**	**G**
Complex Control (*n = 19*)	0.0%[a]	15.8% (*Target*)	0.0% (*Other*)	26.3%	10.5%	0.0%	10.5%	36.8%
Complex AD 1 (*n = 23*)	4.3%	4.3% (*Decoy*)	0.0% (*Other*)	8.7%	21.7%	4.3%	13.0%	43.5%
Complex AD 2 (*n = 32*)	12.5%[a]	6.2% (*Decoy*)	0.0% (*Decoy*)	18.8%	6.2%	0.0%	18.8%	37.5%

NOTE.–Choice share is only shown for alternatives included in each specific choice set. "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternative "D" = $\text{COMPETITOR}_{D(Best)}$ and "A" = $\text{COMPETITOR}_{A(Worst)}$. Alternative B was used as a Target in some conditions and changed to be a Decoy in other conditions. H was used as an Other alternative in some conditions and changed to a Decoy in other conditions. Whether B or H was a Target, Decoy or Other alternative in a set is indicated where choice share is presented. All pairs with the same superscript letter are significantly different at $p<.05$ (chi square test).

Use of minimal effort heuristics- $\text{OTHER}_{G(cheapest)}$ achieved more than double its RFC model predicted choice share in the complex sets (see Table 5-6 above). $\text{OTHER}_{G(cheapest)}$ was the cheapest alternative in the complex condition. Thus, it was likely that it would be chosen by respondents using a lexicographic choice strategy based on price (i.e. a *choose the cheapest alternative* strategy). Choice of $\text{OTHER}_{G(cheapest)}$ was correlated with prior importance ratings of price, $r_{pb} = .241$, $n = 74$, $p < .05$, *one-tailed*, but it was not the favored alternative for these respondents based on overall utilities suggested by their own preferences. A binary logistical

regression was then run to further explore the higher than predicted choice of $\text{OTHER}_{G(\text{cheapest})}$. A regression including price importance in the complex conditions produced a significant model, $\chi^2(1, n = 74) = 4.71$, $p < .05$, that explained between 6.2% (Cox & Snell R Square) and 8.4% (Nagelkerke R Square) of variance in choice of $\text{OTHER}_{G(\text{cheapest})}$ (see Table 5-8). Adding overall utility estimates for the choice of $\text{OTHER}_{G(\text{cheapest})}$ produced almost no change in the r^2 measures, 6.4% (Cox & Snell R Square) and 8.6% (Nagelkerke R Square), and reduced model significance, $\chi^2(2, n = 74) = 4.86$, $p < .1$.[55] In addition, more respondents choosing $\text{OTHER}_{G(\text{cheapest})}$ had preference utilities indicating price as their most important attribute ($M_{Alternative\ G} = .44$, $n = 59$) relative to the alternative with the next highest proportion of respondent utilities indicating price as the most important attribute, COMPETITOR_D ($M_{Alternative\ D} = .18$, $n = 59$, $t = 2.58$, $p < .05$).

TABLE 5-8:
Regression predicting choice of $\text{OTHER}_{G(\text{cheapest})}$

	B	S.E.	Wald	df	Significance	Odds Ratio	95,0% C.I. for Odds Ratio	
							Lower	*Upper*
Time 1 Price Importance	6.516	3.293	3.917	1	.048	676.051	1.065	429232.032
Constant	-2.955	1.318	5.025	1	.025	.052		

NOTE.–"Time 1 Price importance" is the time 1 ACA conjoint analysis elicited attribute importance for price. Model prediction significance: $\chi^2(1, n = 74) = 4.71$, $p < .05$, Cox & Snell R Square = 6.2%, Nagelkerke R Square = 8.4%.

Another approach to evaluate whether respondents were primarily using price to make their decision is to review the reasons provided by respondents as the justification for their choice. As mentioned in the methodology section, respondents were asked to justify their choice at the end of the experiment. 66% of respondents choosing

[55] For comparison, a similar analysis was done for the cheapest alternative, OTHER_{HH}, in the high involvement, complex conditions. A binary regression including utility level OTHER_{HH} was found to be a much better predictor of choice of OTHER_{HH} ($\chi^2(1, n = 84) = 12.61$, $p < .001$, Cox & Snell R Square = 13.9%, Nagelkerke R Square = 22.9%) than a regression including price importance ($\chi^2(1, n = 84) = 5.21$, $p < .05$, Cox & Snell R Square = 6.4%, Nagelkerke R Square = 10.4%). A regression including both utility level and price importance is a significant predictor of choice of OTHER_{HH}, ($\chi^2(1, n = 84) = 7.41$, $p < .01$, Cox & Snell R Square = 13.9%, Nagelkerke R Square = 22.9%), but price importance is not a significant contributor to the model. In contrast to the low involvement conditions, price sensitivity does not explain choice of the cheapest alternative in the high involvement conditions.

$\text{OTHER}_{\text{G(cheapest)}}$ in the complex conditions indicated that they made their choice solely or primarily by price; 39% was the next highest value for an alternative.[56] Price as the primary justification was found to be positively associated only with choice of $\text{OTHER}_{\text{G(cheapest)}}$ (r_{pb} = .40, n = 74, p < .001, *one-tailed*) in the complex task conditions. Hence, some respondents may have relied on a lexicographic strategy and chose the alternative that was cheapest ($\text{OTHER}_{\text{G(cheapest)}}$), regardless if it was the optimal alternative for them.

Low involvement, simple choice tasks

Somewhat surprisingly, a secondary level set configuration effect appears to have occurred in a low involving, simple task. $\text{COMPETITOR}_{\text{D(Best)}}$ was chosen more often in the asymmetric dominance choice set than in the control ($Choice_{\text{asymmetric dominance}}$ = 46% vs. $Choice_{\text{control}}$ = 22%, $\chi^2(1, n = 64) = 3.938$, $p < .05$ (See Table 5-9)). If respondents had made a choice on the most important attribute (price) first, they would have likely chosen the cheapest alternative, $\text{COMPETITOR}_{\text{A(Worst)}}$, as in the control. However, the apparent occurrence of a secondary level set configuration effect in the asymmetric dominance set suggests that respondents processed more than one attribute. A secondary level set configuration effect implies that prior preferences determine that some attribute(s) is processed first to screen alternatives. This is followed by use of another attribute(s), influenced by the configuration of the set, to make a choice. Hence, the order in which attributes were processed seems to have been influenced by set configuration.

[56] Coding of text responses was done blind to experimental conditions and solely by the author in this and in all other instance in this dissertation when the justification text field is used in analysis. Respondent provided reasons such as "Price.", "Cheapest.", and "Cheap, and not too bad on size" were considered an indication of using price as the primary reason for choice and were coded as "1", whereas all other answers were coded as "0". Admittedly, using two coders two interpret the data, ala Bridges, Keller, and Sood (2000), would have strengthened validity of the coding. However, the coding in the current study was simpler and did not require as involved interpretation of responses as in the Bridges et al. (2000) study.

TABLE 5-9:
Choice share for alternatives in low involvement simple task sets

Choice set	Alternative			
	TARGET	DECOY/ TARGET	COMPETITORS	
	C	B	D	A
Simple Control (*n = 27*)	3.7%	29.6% (*Target*)	22.2%[a]	44.4%
Simple AD (*n = 37*)	5.4%	13.5% (*Decoy*)	45.9%[a]	35.1%

NOTE.–Choice share is only shown for alternatives included in each specific choice set. "AD" = asymmetric dominance. Alternative "D" = $\text{COMPETITOR}_{D(Best)}$ and "A" = $\text{COMPETITOR}_{A(Worst)}$. Alternative B was used as a Target in some conditions and changed to be a Decoy in other conditions. Whether B was a Target or Decoy alternative in a set is indicated where choice share is presented. All pairs with the same superscript letter are significantly different at $p<.05$ (chi square test).

The cheapest alternative, $\text{COMPETITOR}_{A(Worst)}$, was the most chosen in the simple task control condition (see Table 5-9). Choice of $\text{COMPETITOR}_{A(Worst)}$ was associated with respondents' utility estimates for this alternative (r_{pb} = .35, n = 27, p < .05, *one-tailed*), suggesting that those who chose this alternative should have liked it. However, merely liking the alternative does not mean it is the most favorable alternative for a respondent. Respondents may like other alternatives as well as if not better than this alternative. For example, $\text{COMPETITOR}_{A(Worst)}$ could have been the second or third favored alternative for a respondent. A review of individual model predictions suggests this. Only 6 of the 12 respondents who choose $\text{COMPETITOR}_{A(Worst)}$ in the simple task control condition were predicted to choose it; indicating that some other alternative was more appropriate for half of those who chose $\text{COMPETITOR}_{A(Worst)}$. Hence, the question of why twice as many respondents choose $\text{COMPETITOR}_{A(Worst)}$ relative to their predicted choice remains. In contrast to choice of the cheapest alternative in the low involvement, complex task, choice of the cheapest alternative in the simple task ($\text{COMPETITOR}_{A(Worst)}$) was not found to be associated prior importance of price (r_{pb} = -.07, n = 27, p > .1, *one-tailed*). However, a review of respondents' stated justifications for choice may again provide the answer as to why $\text{COMPETITOR}_{A(Worst)}$ was chosen more often than predicted. 58% of respondents choosing $\text{COMPETITOR}_{A(Worst)}$ in the complex conditions indicated that they made their choice solely or primarily by price (versus 33% for the next closest

alternative, $\text{COMPETITOR}_{\text{D(Best)}}$). Price as the primary justification was found to be positively associated with choice of $\text{COMPETITOR}_{\text{A(Worst)}}$ (r_{pb} = .47, n = 27, p < .01, *one-tailed*) and not positively associated with any other alternatives in the simple task uniqueness condition. Hence, some respondents in the low involvement conditions with few alternatives (simple task) may have employed a *choose the cheapest alternative* lexicographic heuristic.

5.4. Discussion

High involving, complex choice tasks.

Asymmetric dominance seemed to influence choice of a target alternative in the high involvement complex choice tasks in the current experiment. A finding that the target was chosen more often in the asymmetric dominance conditions relative to an RFC choice model was weak but ads support to hypothesis H_2. Some support was also found for Hypothesis H_4, that a secondary level set configuration effect can occur when consumers face an involving choice task including many alternatives (a complex task). A slight difference in how target alternatives were defined in Experiments 2 and 3 may explain why a secondary level set configuration effect was not more strongly supported in the current experiment (Experiment 3). The frequency component of Range-Frequency theory (Parducci 1965) suggests that people group alternatives into equal sized categories based on the relative ranking of alternatives along an attribute range (e.g. small and large). In Experiment 2, there were four alternatives that were more favorable than average on the competitor attribute and four alternatives that were less favorable than average on the competitor attribute, including the target alternative. It is conceivable that some respondents divided the competitor attribute range in half into something akin to "favorable" and "unfavorable". The target would have fared poorly (i.e. been in the "unfavorable" category) on the competitor attribute in Experiment 2. In the present experiment, there were once again four alternatives that were more favorable than average on the competitor attribute and four alternatives that were less favorable than average on the competitor attribute. However, the target alternative was one of the four more favorable than average alternatives on the competitor attribute in this instance.

Assuming respondents grouped the competitor attribute into equal-sized "favorable" and "unfavorable" categories, the target would now have been in the "favorable" category. In this case, choosing the target alternative may have appeared to be an attractive middle ground option; favorable on the target *and* competitor attributes. Hence, some respondents who would normally have considered competitor alternatives may have been swayed to the target. It might also have been more difficult to detect a secondary level set configuration effect in the current experiment relative to the prior experiments as indicated by generally lower choice of competitor alternatives in the current experiment.

High involving, simple choice tasks.

Compensatory processing seems to have been the norm when respondents were faced with an involving product and a simple choice task including few alternatives. Observed choices did not differ between set configurations and were in accordance with RFC model predictions based on prior preferences. Hence, respondents may have had the motivation and capacity to process all information in making their choice and chose the optimal alternative for them. Lack of support for an attraction effect seems at first to be in contrast to prior research demonstrating attraction effects in simple choice tasks (Huber et al. 1982; Simonson 1989). However, research by Mishra et al. (1993) suggests there is a negative influence of involvement on attraction effects. The authors argued that consumers' process information better when they are more involved in the task and are more consistent in their choices. Consumers are also known to be more likely to use compensatory choice strategies in less complex choice tasks (Bettman et al. 1998; Payne 1976). Hence, respondents choosing from among a few alternatives (a simpler task) in the more involving category may have been less subject to the influence of set configuration and used compensatory processing to make a choice.

Low involving, complex choice tasks.

When asked to choose a product that wasn't involving from among many alternatives (a complex task), many respondents seemed to resort to minimal effort heuristics. Roughly 40% of choices were for the cheapest alternative, even though it wasn't a

likely alternative for some respondents to pick given their preferences. Support for the use of a minimal effort heuristic was suggested by the significant relationship between high price importance and choice of the cheapest alternative, a lack of a relationship between utility estimates and choice of the cheapest alternative, and respondent provided reasons for choice. Hence, a quick and simple heuristic seemed to dominate choice in the low involving, few alternatives choice tasks in this experiment.

Low involving, simple choice tasks.

The unexpected apparent finding of a secondary level set configuration effect in choice of a low involving product from among few alternatives (a simpler task) suggests the asymmetric dominance may have influenced choice among the competitor alternatives. Faced with a simple task, respondents tended to choose the cheapest alternative. When asymmetric dominance was introduced, however, respondents become more likely to choose the competitor alternative that was best on the target attribute. The introduction of asymmetric dominance could have highlighted that the competitor alternative that was more favorable on the target attribute represented a compromise; it was most favorable on one important attribute (similar to the other competitor) and more favorable than the other competitor on another attribute. Hence, choosing the competitor alternative that was more favorable on the target attribute may have been seen as a justifiable compromise. On the other hand, lack of support for an attraction effect was unexpected, as this was the most similar condition to traditional set configuration effects research. The dominating target alternative could have been too unattractive, as indicated by it being chosen only 4-5% of the time in sets containing only four alternatives. This may be because the target alternative was also the most expensive in the set. Hence, even adding a decoy to increase the relative attractiveness of the target alternative may not have been enough to lead to increased choice.

Average vs. individualized alternatives

In the experiments in this study so far, respondents in any given condition have been presented with the same alternatives. This meant that there was variation in how attractive (i.e. utility level) each alternative was in relation to the other alternatives to

each individual respondent. Some respondents may have more preferred some subset of alternatives, whereas other respondents may have preferred other alternatives. In aggregate, this variation between respondent preferences was expected to lead to equal share of choice for each viable alternative. The technique has been used throughout the experiments in this study so far and seems to have enabled the detection of set configuration effects. However, a more sensitive test of these set configuration effects is to create individualized sets of alternatives for each respondent based on their own preferences. This would remove variation in utility levels among alternatives for each respondent. Furthermore, because the alternatives are equally attractive for each individual, a proportional (equal share) model is an appropriate predictor of choice. In the next experiment, alternatives are individually created for each respondent and used to test for set configuration effects.

6. EXPERIMENT 4

6.1. Purpose of the study

All respondents in any given condition in the previous experiments in this study were presented with identical alternatives in a choice task. This is a less sensitive test of set configuration effects relative to if alternatives had been individually created for each respondent. A specific alternative may have been seen as more attractive than other presented alternatives to one respondent, yet less attractive to another respondent because the respondents' preferences differed. Although these alternatives would have been equally attractive in aggregate (i.e. the average of respondent preferences in any condition), the alternatives were not necessarily equally attractive to each individual. Respondents in Experiment 4 are presented with individualized alternatives created from their own preferences to increase the likelihood that all viable alternatives are equally attractive to them. As with Experiment 3, Experiment 4 tests primary and secondary level set configuration effects in complex versus simple choice tasks and the influence of involvement on these choices. Additional product categories are included to increase statistical power.

6.2. Method

6.2.1. Participants and procedure

Two groups of respondents were recruited from an established consumer panel to participate in separate two-part online surveys. In one survey, 259 Norwegian higher education students completed time 1, of which 181 (70%) completed time 2. In the other survey, 353 Norwegian homeowners completed time 1, of which 170 (48%) completed time 2. As with the previous experiment, respondents' preferences were first measured using Adaptive Conjoint Analysis (time 1) approximately one week prior to a choice task (time 2). The choice task involved making a choice from among eight alternatives. Respondents were informed that they would be asked to justify their choice at the end of the survey.

6.2.2. Design

Preferences in the current experiment were measured in the same way as in Experiment 3 and were used to create alternatives. In contrast to previous experiments, alternatives in the current experiment are created individually for each respondent to ensure that the overall utilities of the presented alternatives will be equal for that particular individual. Although the individualized alternatives differ between respondents, the specific relationships among alternatives used to promote set configuration effects are held constant. For example, the target alternative in housing conditions is always walking difference from campus, but may differ on rental price and/or size for each respondent. On the other hand, the competitor alternative that is the most favorable on the target attribute is always 15 minutes from campus by bus, but again differs on rental price and/or size for each respondent.

To manipulate complexity, four option (*simple*) and eight option (*complex*) choice set configurations were created. For both simple and complex configurations, the choice set configuration manipulation was uniqueness (*UQ*) X asymmetric dominance (*AD*).[57] As in Experiment 3, asymmetric dominance was tested using both one and two decoy sets in the complex choice task conditions and one decoy in the simple task conditions. Uniqueness conditions contained one target alternative. All complex task sets contained three competitor alternatives that were similar on the competitor attribute and varied in attractiveness on the target attribute. Simple task sets contained two competitor alternatives that were similar on the competitor attribute and varied in attractiveness on the target attribute. This task complexity by set configuration design was tested with four product categories to examine level of product involvement on set configuration effects. Product categories included student housing (high involvement) and microwaves (low involvement), as in Experiment 3, as well as two new categories: heat pumps (high involvement) and blenders (low involvement). Heat pumps are a more efficient heating source for housing than several other heating sources and are popular among Norwegians. Because heat pumps are relatively expensive, it was believed that they would be a highly involving category. Students

[57] A specific set configuration control condition was not created in this experiment, as the basis for analysis of set configurations effects here is a comparison between observed and expected choice.

were presented with two product categories meant to represent high (housing) and low (microwaves) involvement and randomly assigned to one of seven experimental conditions within each product category.[58] The first five choice set configurations (1 – 5) were created with individualized alternatives and tested task complexity (high/low) and set configuration (UQ/AD). Sets 6 and 7 tested set configuration (UQ/AD) in a complex task using aggregate alternatives created following the same procedure used in Experiment 3 (i.e. all respondents in a set were presented with the same alternatives). The inclusion of these aggregate level tests (sets 6 and 7) allows for a direct comparison of how alternatives were created (individualized versus aggregate level alternatives) and the magnitude of set configuration effects depending on how the alternatives were created. Homeowners were presented with two product categories meant to represent high (heat pumps) and low (blenders) involvement and randomly assigned to one of five experimental conditions within each product category (see Table 6-1). All five of these sets (1 – 5) were created with individualized alternatives and tested task complexity (high/low) and set configuration (UQ/AD).

[58] Identification of sets using 1 – 7 does not imply that respondents presented with set 1 in a high involvement condition were also presented set 1 in the low involvement condition. Respondents could have been assigned any combination of the two product categories (e.g. set 2 for high involvement and set 5 for low involvement).

TABLE 6-1:
Experiment 4 choice set configurations

Set	Product category			
	Respondents: *students*		**Respondents: *homeowners***	
	High involvement: *housing*	Low Involvement: *microwaves*	High involvement: *heat pumps*	Low Involvement: *blenders*
Individualized alternatives				
1: Complex UQ	22	27	37	27
2: Complex AD 1	27	28	31	35
3: Complex AD 2	22	21	35	33
4: Simple UQ	30	22	34	34
5: Simple AD 1	29	30	33	41
Aggregate alternatives				
6: Complex UQ	25	23	-	-
7: Complex AD 2	26	30	-	-

NOTE.–Numbers in each cell indicate the number of respondents (*n*) in each condition. "Individualized alternatives" refers to conditions in which alternatives were created for each respondent. "Aggregate alternatives" refers to conditions in which each respondent in a given condition was shown the same alternatives. Aggregate level alternatives were only tested with students. "UQ" = unique, "AD 1" = asymmetric dominance with one decoy and "AD 2" = asymmetric dominance with two decoys.

Housing options varied on four attributes; size, distance from campus, how many students share a bathroom and rental price. As in the previous experiment, Price was found to be the most important attribute (M_{price} = .310, *SE* = .006, *n* = 181) from the time 1 elicitation of preferences in the current experiment. Distance (M_{distance} = .264, *SE* = .006, *n* = 181) and bathroom sharing (M_{bathroom} = .230, *SE* = .006, *n* = 181) were found to be the most-important non-price attributes, followed by size (M_{size} = .195, *SE* = .004, *n* = 181). The target attribute was distance and the competitor attribute was bathroom sharing. Target alternatives were assigned the most favorable level of all alternatives on the target attribute, whereas competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute: $\text{COMPETITOR}_{\text{RH(Best)}}$ was the most favorable competitor on the target attribute, $\text{COMPETITOR}_{\text{SH(Middle)}}$ (included in complex task sets only) was a competitor with an intermediate level of

favorability on the target attribute, and COMPETITOR$_{BP(Worst)}$, was the least favorable competitor on the target attribute.

Microwave ovens varied on power (watts), size (liters), brand and price. In contrast to the previous experiment, in which Price was the most important attribute, Size (M_{size} = .281, *SE* = .006, *n* = 128) was found to be the most-important attribute in the current study, followed by price (M_{price} = .248, *SE* = .006, *n* = 128), brand (M_{brand} = .236, *SE* = .006, *n* = 128), and power (M_{power} = .146, *SE* = .004, *n* = 128). Although power was not the most-important non-price attribute in the current experiment, it was the most-important non-price attribute in the previous experiment. To maintain consistency, Target alternatives were assigned the most favorable level of all alternatives on power as the target attribute. Also in accordance with the prior experiment, Competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute (brand): COMPETITOR$_{D(Best)}$ was the most favorable competitor on the target attribute, COMPETITOR$_{G(Middle)}$ (included in complex task sets only) was a competitor with an intermediate level of favorability on the target attribute, and COMPETITOR$_{A(Worst)}$, was the least favorable competitor on the target attribute.

Heat pump options varied on four attributes; COP (heating efficiency), EER (cooling efficiency), noise level and price. Noise level (M_{noise} = .324, *SE* = .006, *n* = 170) and COP (M_{COP} = .274, *SE* = .005, *n* = 170) were found to be the most-important attributes from time 1 elicitation of preferences, followed by price (M_{price} = .250, *SE* = .005, *n* = 170) and EER (M_{EER} = .152, *SE* = .004, *n* = 170). The target attribute was noise level and the competitor attribute was COP. Target alternatives were assigned the most favorable level of all alternatives on the target attribute (noise level) and competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute (COP): COMPETITOR$_{D(Best)}$ was the most favorable competitor on the target attribute, COMPETITOR$_{G(Middle)}$ (included in complex task sets only) was a competitor with an intermediate level of favorability on the target attribute, and COMPETITOR$_{A(Worst)}$, was the least favorable competitor on the target attribute.

Blenders varied on size (liters), power (watts), brand and price. Brand (M_{brand} = .327, *SE* = .005, *n* = 170) was found to be the most-important attribute, followed by size

(M_{size} = .280, *SE* = .005, *n* = 170), price (M_{price} = .241, *SE* = .005, *n* = 170), and Power (M_{power} = .151, *SE* = .004, *n* = 170). Target alternatives were assigned the most favorable level of all alternatives on the target attribute (size) and competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute (brand): $\text{COMPETITOR}_{D(Best)}$ was the most favorable competitor on the target attribute, $\text{COMPETITOR}_{G(Middle)}$ (included in complex task sets only) was a competitor with an intermediate level of favorability on the target attribute, and $\text{COMPETITOR}_{A(Worst)}$, was the least favorable competitor on the target attribute. Brand was used as the Competitor attribute instead of the Target attribute to remove the potential for brand familiarity to provide a cue to determine choice among the Competitor alternatives.

6.3. Results

Involvement and choice difficulty

As in Experiment 3, involvement was tested as a moderator of secondary level set configuration effects in the current experiment. Hence, it was important that the product categories presented to respondents were perceived to vary on involvement. Among students, involvement was higher in high involvement (housing) conditions, ($M_{housing}$ = 5.36, *n* = 161) relative to the low involvement (microwave oven) conditions, ($M_{microwave}$ = 3.03, *n* = 128, *t* = 13.57, *p* < .001), on a 7-point Likert scale. Among homeowners, involvement was also higher in the high involvement (heat pumps) conditions, ($M_{heat\ pump}$ = 4.72, *n* = 170) relative to the low involvement (blender) conditions, ($M_{blender}$ = 3.57, *n* = 170, *t* = 7.28, *p* < .001). Hence, the high involvement conditions were perceived to have more involving product categories than the low involvement conditions.

In contrast to Experiment 3, ratings of choice difficulty in the current experiment were higher in complex choice task conditions ($M_{complex}$ = 4.05, *n* = 449) relative to simple task conditions (M_{simple} = 3.65, *n* = 253, *t* = 2.76, *p* < .01) on a 7-point Likert scale. There was no main effect of involvement on choice difficulty ($M_{high\ involvement}$ = 3.89, *n* = 351, vs. $M_{low\ involvement}$ = 3.91, *n* = 351, *t* = -0.164, *p* > .1). Among the individualized

alternatives, choice difficulty was higher in more complex tasks in both the high involvement "housing" ($M_{complex}$ = 4.38, n = 71, vs. M_{simple} = 3.47, n = 59, t = 2.98, p < .05), and low involvement "microwave oven" conditions ($M_{complex}$ = 3.97, n = 76, vs. M_{simple} = 3.37, n = 52, t = 1.78, p < .1). There was no effect of task complexity on choice difficulty in the high involvement "heat pumps" ($M_{complex}$ = 4.20, n = 103, vs. M_{simple} = 3.83, n = 67, t = 0.66, p > .1), or low involvement "blenders" conditions ($M_{complex}$ = 4.01, n = 95, vs. M_{simple} = 3.82, n = 75, t = 1.31, p > .1). Furthermore, this experiment was designed to increase the difficulty of making a choice through using individualized alternatives. Hence, choice difficulty was compared between individualized and aggregate alternatives sets. Choice was seen as more difficult among students presented with individualized ($M_{individualized}$ = 4.17, n = 147) versus aggregate ($M_{aggregate}$ = 3.77, n = 104, t = 1.66, p < .1) alternatives. However, additional analysis of the data suggests an interaction between involvement and how the alternatives were created. Whereas choice was seen as more difficult among students presented with individualized ($M_{individualized}$ = 4.38, n = 71) versus aggregate ($M_{aggregate}$ = 3.55, n = 51, t = 2.62, p < .01) alternatives in the complex high involvement (housing) conditions, there was no difference in perceived choice difficulty when students were presented with individualized ($M_{individualized}$ = 4.14, n = 71) relative to aggregate ($M_{aggregate}$ = 3.53, n = 51, t = 1.51, p > .1) alternatives in the complex low involvement (microwave) conditions. These choice difficulty findings have implications that will be addressed in the discussion section of this chapter.

6.3.1. Effects in high involvement choice tasks

Respondents in this experiment should have no reason to prefer one viable alternative to another because alternatives were created to be equal in utility for each respondent. This equality among utilities suggests that a proportional (equal share) model is appropriate for comparisons with observed choice (i.e. choice of equally attractive alternatives should be distributed equally) and was used as a baseline for comparisons. Hence, observed choices were compared to equal share model predictions (see Table 6-2; and see Appendix 10.10 for results further broken down by product category). As discussed in earlier experiments in this study, a difference between observed and predicted share of an alternative might suggest that the configuration of the set

influenced choice. In the high involvement conditions, there were three alternatives, TARGET$_B$, COMPETITOR$_D$, and OTHER$_H$, which were chosen more often than predicted by an equal proportions model, which will now be discussed (see Table 6-2).[59]

TABLE 6-2:
Observed verses proportional choice: high involvement

Choice set		Alternative							
		TARGET	***DECOY/ OTHER***	***DECOY/ OTHER***	***COMPETITORS***			***OTHERS***	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Individualized alternatives									
1	Complex UQ (*n = 59*)	.22	.02 (*Other*)	.00 (*Other*)	.29**	.07**	.20	.09*	.12
2	Complex AD 1 (*n = 58*)	.29**	.00 (*Decoy*)	.00 (*Other*)	.17	.16	.17	.05***	.16
3	Complex AD 2 (*n = 57*)	.30***	.02 (*Decoy*)	.00 (*Decoy*)	.23	.07**	.18	.09*	.12
4	Simple UQ (*n = 64*)	.31	.06 (*Other*)	-	.28	-	.34	-	-
5	Simple AD (*n = 62*)	.36	.03 (*Decoy*)	-	.24*	-	.37	-	-
Aggregate alternatives									
6	Complex UQ (*n = 25*)	.32**	.00 (*Other*)	.00 (*Other*)	.00**	.04	.20	.00**	.44***
7	Complex AD 2 (*n = 26*)	.27	.04 (*Decoy*)	.04 (*Decoy*)	.15	.11	.15	.04	.19

NOTE.–Significance is calculated for observed choice of alternatives vs. equal share (proportional) model predictions. Because there were 6 viable alternatives in complex task sets, 16.67% share was predicted for each viable alternative. There were 3 viable alternatives in each simple task set, so 33.3% share was predicted for each viable alternative. Decoy alternatives are predicted to achieve 0% choice share. Share percentages may not total to 1 in some instances due to rounding. "UQ" = unique, "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions. Whether C or F was a Decoy or inferior Other alternative in a set is indicated where choice share is presented. Because C and F were inferior in all cases, expected share for them was 0%. Alternative "D" = COMPETITOR$_{D(Best)}$, "G" = COMPETITOR$_{G(Middle)}$ and "A" = COMPETITOR$_{A(Worst)}$. Aggregate alternatives only include the student housing category. Significance is calculated for observed choice of alternatives vs. model predictions at the levels indicated below.

*p<.1.
**p<.05.
***p<.01 (all binomial tests, one-tailed).

[59] Two alternatives (E & G) were chosen less often than predicted in some conditions, as shown in Table 6-2. Because so few respondents chose these alternatives, it was difficult to run an analysis based on prior preferences to explain choice of these alternatives.

Primary level effects. TARGET_B was chosen more often than predicted in the complex task, asymmetric dominance conditions with individualized alternatives (Set 2, $Choice_{observed}$ = 29.3% vs. $Choice_{predicted}$ = 16.7%, n = 58, $p < .05$, *binomial test, one-tailed*; and Set 3, $Choice_{observed}$ = 29.8% vs. $Choice_{predicted}$ = 16.7%, n = 57, $p < .01$, *binomial test, one-tailed*). This finding suggests that asymmetric dominance influenced choice in these sets, resulting in increased choice of the target alternative. The target alternative was also chosen more often than predicted in the complex task, uniqueness condition with aggregate alternatives (Set 6, $Choice_{observed}$ = 32.0% vs. $Choice_{predicted}$ = 16.7%, n = 25, $p < .05$, *binomial test, one-tailed*); suggesting that the uniqueness set configuration influenced choice of the target alternative in this condition.

Secondary level effects. Secondary level effects findings are mixed in this experiment. Among the aggregate alternatives in the high involvement complex task conditions, an increase in choice of the most favorable competitor on the target attribute, $\text{COMPETITOR}_{D(Best)}$, was observed from the uniqueness (Set 6, $Choice_{unique}$ = 0%) to the asymmetric dominance with two decoys set (Set 7, $Choice_{asymmetric\ dominance}$ = 15%, $\chi^2(1, n = 51) = 4.17$, $p < .05$, *Cramer's V* = .29), suggesting a secondary level set configuration effect occurred. In contrast, no support was found for a secondary level set configuration effect in the high involvement individualized alternatives conditions; as choice of $\text{COMPETITOR}_{D(Best)}$ did not vary between those sets. Hence, secondary level effects were observed in conditions with aggregate alternatives, but not in conditions with individualized alternatives. This finding will be addressed in the discussion section.

Although there was no indication of a secondary level effect in the individualized alternatives conditions, choice of $\text{COMPETITOR}_{D(Best)}$ was higher than predicted in the complex task uniqueness choice set (Set 1, $Choice_{observed}$ = 28.8% vs. $Choice_{predicted}$ = 16.7%, n = 59, $p < .05$, *binomial test, one-tailed*). A number of regression models using prior preferences were run to explain the higher than expected choice of $\text{COMPETITOR}_{D(Best)}$. However, none of the regression models were significant predictors of choice of $\text{COMPETITOR}_{D(Best)}$. This may be due to $\text{COMPETITOR}_{D(Best)}$ representing an attractive compromise on the most important attributes and will be

addressed in the discussion section of this chapter. In contrast, choice of $\text{COMPETITOR}_{\text{D(Best)}}$ was lower than predicted in the simple task asymmetric dominance condition (Set 5, $Choice_{\text{observed}}$ = 24.2% vs. $Choice_{\text{predicted}}$ = 33.3%, n = 62, $p < .1$, *binomial test, one-tailed*). This was a rather weak finding and has not been observed in the previous experiments in this dissertation and attempts to explain this finding using regression models, as above, were not successful.

Choice of the cheapest alternative. OTHER_{H} was chosen more often than predicted in the complex task, uniqueness condition with aggregate alternatives (Set 6, $Choice_{\text{observed}}$ = 44.0% vs. $Choice_{\text{predicted}}$ = 16.7%, n = 25, $p < .01$, *binomial test, one-tailed*). OTHER_{H}, the cheapest alternative in this set, was the only alternative to be positively associated with prior importance of price in the complex task uniqueness condition with aggregate alternatives (set 6, r_{pb} = .55, n = 25, $p < .01$, *one-tailed*). Furthermore, 50% of respondents choosing OTHER_{H} in aggregate alternatives complex task conditions indicated that they made their choice solely or primarily by price (versus 11% for the next closest alternative). Price as the primary justification for choice was found also to be positively associated with choice of OTHER_{H} (sets 6-7, r_{pb} = .52, n = 51, $p < .001$, *one-tailed*) and no other alternatives in the complex task conditions. Hence, higher than predicted choice of OTHER_{H} seems to reflect some respondents' use of a *choose the cheapest* heuristic.

In addition, alternative OTHER_{H} was chosen more often in the aggregate alternatives complex task uniqueness condition (Set 6, $Choice_{\text{unique}}$ = 44%) relative to the asymmetric dominance with two decoys set (Set 7, $Choice_{\text{asymmetric dominance}}$ = 19%, $\chi^2(1, n = 51) = 3.63$, $p < .1$, *Cramer's V* = .27). Because choice of OTHER_{H} has been found to be associated with prior preferences for price (see the discussion above), a binary logistical regression was run to determine if set configuration was a predictor after controlling for prior importance of price (see Table 6-3). A model including prior importance of price was a significant predictor, $\chi^2(1, n = 51) = 18.38$, $p < .001$, and explained between 30.3% (Cox & Snell R Square) and 42.5% (Nagelkerke R Square) of variance in choice of OTHER_{H}. Set configuration (uniqueness versus asymmetric dominance) was not found to be a significant predictor of choice of OTHER_{H} when added to the model and did not add explanatory power (model: $\chi^2(2, n$

= 51) = 18.85, $p < .001$, Cox & Snell R Square = 30.9%, Nagelkerke R Square = 43.4%; see Table 6-3). This may be explained by a review of the data showing that there were more respondents with prior preferences indicating price as their most important attribute in the uniqueness (sets 6, $M_{\text{price most important}} = .68$, $n = 25$) relative to the asymmetric dominance condition (set 7, $M_{\text{price not most important}} = .38$, $n = 26$, $t = 2.17$, $p < .05$). Hence, choice of OTHER_{H} appears to be associated with prior preferences for price and not the configuration of the set.

TABLE 6-3:
Regression predicting choice likelihood of OTHER_{H}

	B	S.E.	Wald	df	Significance	Odds Ratio	95,0% C.I. for Odds Ratio	
							Lower	*Upper*
Price importance	18.358	6.430	8.152	1	.004	9.393E7	316.15	2.79E13
Set (UQ vs. AD)	-.522	.761	.471	1	.492	.593	.134	2.635
Constant	-6.901	2.466	7.832	1	.005	.001		

NOTE.–"UQ" = uniqueness and "AD" = asymmetric dominance. Model prediction significance: $\chi^2(2, n = 51) = 18.9$, $p < .001$, Cox & Snell R Square = 30.9%, Nagelkerke R Square = 43.4%.

6.3.2. Effects in low involvement choice tasks

Primary level effects. In the low involvement complex task conditions, the cheapest alternative was chosen more often than predicted by a proportional (equal share) model (see Table 6-4). Alternative OTHER_{H} was the cheapest alternative in the complex task choice set configurations. 36% of respondents choosing OTHER_{H} in the complex conditions cited price as the only or most important factor in their choice (versus 19% for next closest alternative in the complex task, $\text{COMPETITOR}_{\text{A(worst)}}$). Price as the primary justification for choice was also found to be positively associated with choice of OTHER_{H} (sets 1-3 and 6-7, $r_{pb} = .35$, $n = 217$, $p < .001$, *one-tailed*) in the complex task conditions. No other alternatives were found to be positively associated with price as the primary justification of choice in the complex task conditions. These results suggest that some respondents used a *choose the cheapest alternative* heuristic to make their choice in these conditions.

TABLE 6-4:
Observed verses proportional choice: low involvement

Choice set		Alternative							
		TARGET	*DECOY/ OTHER*	*DECOY/ OTHER*	*COMPETITORS*			*OTHERS*	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Individualized alternatives									
1	Complex UQ (*n = 54*)	.11	.04 (*Other*)	.02 (*Other*)	.22	.07**	.17	.07**	.30**
2	Complex AD 1 (*n = 63*)	.14	.06 (*Decoy*)	.02 (*Other*)	.12	.05***	.14	.11	.35***
3	Complex AD 2 (*n = 54*)	.13	.00 (*Decoy*)	.04 (*Decoy*)	.19	.07**	.09*	.19	.30**
4	Simple UQ (*n = 56*)	.29	.00 (*Other*)	-	.39	-	.32	-	-
5	Simple AD (*n = 71*)	.38	.03 (*Decoy*)	-	.37	-	.23**	-	-
Aggregate alternatives									
6	Complex UQ (*n = 23*)	.22	.00 (*Other*)	.04 (*Other*)	.09	.04	.04	.13	.44***
7	Complex AD 2 (*n = 30*)	.20	.07 (*Decoy*)	.07 (*Decoy*)	.10	.07	.03**	.10	.37***

NOTE.–Significance is calculated for observed choice of alternatives vs. equal share (proportional) model predictions. Because there were 6 viable alternatives in complex task sets, 16.67% share was predicted for each viable alternative. There were 3 viable alternatives in each simple task set, so 33.3% share was predicted for each viable alternative. Decoy alternatives are predicted to achieve 0% choice share. Share percentages may not total to 1 in some instance due to rounding. "UQ" = unique, "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions (i.e. these two alternatives were always non-viable for choice). Whether C or F was a Decoy or inferior Other alternative in a set is indicated where choice share is presented. Because C and F were inferior in all cases, expected share for them was 0%. Alternative "D"= $\text{COMPETITOR}_{\text{D(Best)}}$, "G" = $\text{COMPETITOR}_{\text{G(Middle)}}$, and "A" = $\text{COMPETITOR}_{\text{A(Worst)}}$. Aggregate alternatives only include the microwave category. Significance is calculated for observed choice of alternatives vs. model predictions at the levels indicated below.

*p<.1.
**p<.05.
***p<.01 (all binomial tests, one-tailed).

Alternatives $\text{COMPETITOR}_{\text{G(middle)}}$ and $\text{COMPETITOR}_{\text{A(worst)}}$ were chosen less often than predicted in a couple of instances. It was difficult to assess the reasons for this because few respondents chose these alternatives and regression models built on preferences and the justifications provided by those respondents choosing the alternatives did not reveal any obvious patterns. Additionally, choice of $\text{COMPETITOR}_{\text{G(middle)}}$ and $\text{COMPETITOR}_{\text{A(worst)}}$ was generally not significantly different

between uniqueness and asymmetric dominance conditions. Given that no alternatives except the cheapest alternative were chosen more often than predicted, and that there was no difference in choice share between sets for those alternatives chosen less often than predicted, it seems that set configuration may not have influenced choice in this test.

Secondary level effects. Although a secondary level effect was observed in the low involvement simple choice task in the previous experiment, this effect was not observed in the current experiment. In the low involvement, simple choice task, there was no difference in choice of the competitor that was most favorable on the target attribute, $\text{COMPETITOR}_{\text{D(Best)}}$, between uniqueness and asymmetric dominance conditions ($\text{C}hoice_{\text{unique}}$ = 39%, vs. $\text{C}hoice_{\text{asymmetric dominance}}$ = 37%, $\chi^2(1, n = 127) = 0.10$, $p > .1$, *Cramer's V* = .03).

6.4. Discussion

Individualized alternatives and secondary level effects

The use of individualized alternatives in this experiment was meant to improve sensitivity in measuring secondary level set configuration effects. Although a secondary level effect seems to have occurred among respondents presented with aggregate alternatives (with housing as the product category), a secondary level effect did not occur when respondents were presented with individualized alternatives. In addition, although observed in the previous experiment, a secondary level set configuration in low involving, simple choice tasks was not observed in the current experiment. A possible interpretation of these findings is that sets containing alternatives that are equal in utility to a consumer may represent a boundary condition for secondary level set configuration effects. As suggested by choice difficulty ratings, respondents presented with aggregate alternatives found the decision to be less difficult compared with those presented individualized alternatives. Respondents shown aggregate alternatives may have found that the alternatives differed in utility for them. As a result, trade-offs may have been perceived to be less difficult because respondents could rely on their preferences to at least determine alternatives for

consideration; with some respondents including the competitor alternatives. When presented with individualized alternatives that were designed to be equal in utility, however, respondents perceived the choice task to be more difficult relative to those who were presented with aggregate alternatives. Trade-offs may have been more difficult to make among the more evenly attractive (i.e. similar utility levels) individualized alternatives relative to aggregate alternatives. Rather than face a difficult trade-off in considering and choosing among the competitor alternatives, respondents presented with individualized alternatives may have simplified their choice by choosing the dominating target alternative as a means to avoid trade-offs. The next experiment will seek to reduce this difficulty in choosing among alternatives. Individualized alternatives will be used again, but with increased utility levels for the competitor alternatives in relation to all other alternatives. With their relatively higher utility, the competitor alternatives should be seen as more attractive to respondents than other alternatives. This should reduce tension from trade-offs, maintain task complexity (i.e. the same number of alternatives and attributes will be used), reduce the difficulty of the choice and allow for a focus on secondary level effects. Because the competitor alternatives will be set to be more attractive than other alternatives, respondents should be able to focus on evaluating the competitor alternatives and allow for secondary level processing. The intention is to increase the likelihood that respondents will choose a competitor alternative. Furthermore, this technique creates an appropriate test of the mechanism leading to secondary level set configuration effects. If the salience argument for secondary level set effects discussed in relation to Hypothesis H_4 is correct, respondents will notice the existence of a dominating alternative in the set and this will influence the decision of which competitor alternative to choose; leading to choice of the competitor that is most favorable on the target attribute. This will be further discussed in the introduction to the next chapter.

Primary level effects

In line with the previous experiment, support was found for an influence of uniqueness and asymmetric dominance on choice in the high involvement category, whereas the cheapest alternative tended to be the predominant choice in the low

involvement complex tasks. Support for primary level set configuration effects in high involvement complex choice tasks has now been found in several instances across the experiments in this study. Therefore, the next experiment will prioritize testing the mechanism for secondary level effects, as discussed above.

7. EXPERIMENT 5

7.1. Purpose of the study

Experiment 5 was created to test the mechanism for secondary level set configuration effects. Hypothesis H_4 argues that secondary level effects occur because respondents build consideration sets consisting of competitor alternatives, but allow their choice to be influenced by the salience of a good (dominating) alternative in an asymmetric dominance relationship among non-considered alternatives. By creating individualized alternatives based on respondents own preferences, and increasing the utility of the competitor alternatives relative to all other alternatives, respondents should be induced to consider and choose competitor alternatives (i.e. the competitor alternatives are higher in utility, or more attractive, than all other alternatives). If the mechanism discussed in relation to Hypothesis H_4 is correct, asymmetric dominance among non-considered alternatives should influence choice among the competitor alternatives; resulting in choice of the competitor alternative that is the most favorable on the target attribute. Given the focus on testing the mechanism for secondary level set configuration effects, a desire for larger samples sizes in each test and constraints on the number of respondents available, only the original two product categories (housing and microwaves) were included in this experiment. Additionally, most findings in complex tasks have been clear in two decoys conditions, but not always in one decoy conditions. Hence, the asymmetric dominance in complex set configurations in this experiment always include two decoys.

7.2. Method

7.2.1. Participants and procedure

Respondents were recruited from an established consumer panel to participate in two online surveys. 557 Norwegian higher education students completed the first survey, of which 335 (60%) completed the second survey. As with the previous experiment, respondent preferences were first measured using Adaptive Conjoint Analysis (time 1) approximately one week prior to a choice task in time 2. The choice task involved

making a choice from among eight alternatives. Respondents were informed that they would be asked to justify their choice at the end of the survey, which was followed up with a question at the end of the survey asking them to explain their choice.

7.2.2. Design

Alternatives in Experiment 5 were created in same way as individualized alternatives in Experiment 4 except for an adjustment to increase utility of the competitor alternatives relative to all other alternatives. Respondents were randomly assigned to both a high involvement (housing) and low involvement (microwaves) condition (see Table 7-1). Within each product category, respondents were presented one of eight choice sets than varied in complexity (complex versus simple), set configuration (uniqueness versus asymmetric dominance) and increased level of competitor alternative utility (moderate versus high). Complexity was manipulated by the use of eight (complex) versus four (simple) alternatives. Asymmetric dominance was tested with two decoy sets in the complex choice task conditions and one decoy in the simple task conditions. The uniqueness condition contained one target alternative. All complex task sets contained three competitor alternatives that were similar on the competitor attribute and varied in attractiveness on the target attribute. Simple task sets contained two competitor alternatives that were similar on the competitor attribute and varied in attractiveness on the target attribute.

Competitor utilities were raised in relation to the other alternatives as a test of the mechanism for secondary level effects. A raise in utility levels that is too low might not increase consideration of competitor alternatives, whereas a raise in utilities that is too high might increase consideration of the competitor alternatives to the point where very little processing of the other alternatives might occur (i.e. the competitor alternatives might become too attractive in relation to the other alternatives). To improve the probability that the raised utility levels used in this test are appropriate, two utility levels for competitor alternatives are tested: competitor alternatives were designed with utilities that were 10 higher (moderate) or 20 higher (high) than other viable alternatives. These levels were determined through a sensitivity analysis involving reducing prices for competitor alternatives for a sampling of respondents. A

10% lower price represented an increase of approximately 10 in utility and a 20% lower price represented an increase of approximately 20 in utility. Most target and other alternatives have a utility of 30, as in the earlier experiments. Hence in this experiment, competitor alternatives in the "moderate", or 10, raised utility conditions have utilities around 40 and competitor alternatives in the "high", or 20, raised utility conditions have utilities around 50.

TABLE 7-1:
Experiment 5 choice set configurations

Set	**High involvement** (*n*)	**Low Involvement** (*n*)
Moderate raised competitor utilities		
1: Complex UQ	45	40
2: Complex AD	36	43
3: Simple UQ	36	42
4: Simple AD	41	49
High raised competitor utilities		
5: Complex UQ	39	41
6: Complex AD	44	34
7: Simple UQ	49	41
8: Simple AD	45	45

NOTE.–Numbers in each cell indicate the number of respondents (*n*) in each condition. "Moderate raised competitor utilities" refers to conditions in which competitor alternatives have utilities that are 10 higher than other viable alternatives. "High raised competitor utilities" refers to conditions in which competitor alternatives have utilities that are 20 higher than other viable alternatives. "UQ" = unique and "AD" = asymmetric dominance with two decoys in complex conditions and asymmetric dominance with one decoy in simple conditions.

Housing options varied on four attributes; size, distance from campus, how many students share a bathroom and rent. From the time 1 elicitation of preferences, price was found to be the most important attribute (M_{price} = .304, *SE* = .004, *n* = 335). Distance (M_{distance} = .256, *SE* = .004, *n* = 335) and bathroom sharing (M_{bathroom} = .243, *SE* = .005, *n* = 335) were the most-important non-price attributes, followed by size (M_{size} = .196, *SE* = .003, *n* = 335). The target attribute was distance and the competitor attribute was bathroom sharing. Target alternatives were assigned the most favorable

level of all alternatives on the target attribute, whereas competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute: $\text{COMPETITOR}_{\text{RH(Best)}}$ was the most favorable competitor on the target attribute, $\text{COMPETITOR}_{\text{SH(Middle)}}$ (included in complex task sets only) was a competitor with an intermediate level of favorability on the target attribute, and $\text{COMPETITOR}_{\text{BP(Worst)}}$, was the least favorable competitor on the target attribute.

Microwave ovens varied on power (watts), size (liters), brand and price. Price was found to be the most important attribute (M_{price} = .407, SE = .006, n = 335). In accordance with Experiment 3, Power (M_{power} = .246, SE = .004, n = 335) and size (M_{size} = .213, SE = .003, n = 335) were found to be the most-important non-price attributes, followed brand (M_{brand} = .134, SE = .005, n = 335). Target alternatives were assigned the most favorable level of all alternatives on the target attribute (power) and competitor alternatives were assigned the most favorable level of all alternatives on the competitor attribute (brand): $\text{COMPETITOR}_{\text{D(Best)}}$ was the most favorable competitor on the target attribute, $\text{COMPETITOR}_{\text{G(Middle)}}$ (included in complex task sets only) was a competitor with an intermediate level of favorability on the target attribute, and $\text{COMPETITOR}_{\text{A(Worst)}}$, was the least favorable competitor on the target attribute.

7.3. Results

Involvement and choice difficulty

Once again, ratings of product category involvement were measured to check that the categories differed on involvement. Involvement was higher in the high involvement conditions, ($Involvement_{\text{high}}$ = 5.30, n = 335) relative to the low involvement conditions, ($Involvement_{\text{low}}$ = 3.32, n = 335, t = 20.61, p < .001), on a 7-point Likert scale.

One of the purposes of this experiment was to make it easier for respondents to select competitor alternatives for consideration relative to the previous experiment. Hence, choice difficulty ratings were compared between the current and previous experiments. Choice difficulty ratings were higher in the current experiment (*Choice*

Difficulty$_{\text{Experiment 5}}$ = 4.10, n = 670) relative to the prior experiment (*Difficulty*$_{\text{Experiment 4}}$ = 3.85, n = 258, t = 2.02, p < .05).[60] However, an interaction was found when including involvement as a factor. Ratings of choice difficulty were not different between experiments for the complex tasks conditions (*Choice Difficulty*$_{\text{Experiment 5}}$ = 4.38, n = 322, vs. *Difficulty*$_{\text{Experiment 4}}$ = 4.17, n = 147, t = 1.19, p > .1), but were different between experiments for the simple task conditions (*Choice Difficulty*$_{\text{Experiment 5}}$ = 3.84, n = 348, vs. *Choice Difficulty*$_{\text{Experiment 4}}$ = 3.42, n = 111, t = 2.48, p < .05). Choice difficulty was also measured to check for differences between the complex and simple choice tasks. Choice difficulty ratings were higher in the complex task conditions (*Choice Difficulty*$_{\text{complex}}$ = 4.38, n = 322) relative to the simple task conditions, (*Choice Difficulty*$_{\text{simple}}$ = 3.84, n = 348, t = 4.39, p < .001) on a 7-point Likert scale.[61] There was no effect of amount of utility increase on ratings of choice difficulty (*Choice Difficulty*$_{\textit{moderate raised utility}}$ = 4.08, n = 332 vs. *Choice Difficulty*$_{\textit{high raised utility}}$ = 4.11, n = 338, t = -0.22, p > .1).

Increased choice of competitor alternatives

A primary purpose of this experiment was to increase the attractiveness of competitor alternatives such that they would be chosen more often in complex tasks. Comparing the current experiment with the previous experiment suggests that this goal was accomplished. More respondents in complex task conditions chose a competitor alternative in the current experiment (*Chose Competitor*$_{\text{Experiment 5}}$ = 55%, n = 164) as compared with the previous experiment (*Chose Competitor*$_{\text{Experiment 4}}$ = 27%, n = 71, t = -4.09, p < .001). Hence, even though perceptions of choice difficulty were not different between the two experiments in complex tasks, as just discussed above, consideration of competitor alternatives was higher in the current experiment.

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[60] This analysis compared only the product categories that were used in both experiments and only individualized alternative conditions (i.e. aggregate alternatives conditions were not included).

[61] Differences in choice difficulty ratings due to task complexity were observed in both the high involvement (*Choice Difficulty*$_{\text{complex}}$ = 4.50, n = 164 vs. *Choice Difficulty*$_{\text{simple}}$ = 3.85, n = 171, t = 3.92, p < .001) and low involvement conditions (*Choice Difficulty*$_{\text{complex}}$ = 4.26, n = 158 vs. *Choice Difficulty*$_{\text{simple}}$ = 3.82, n = 177, t = 2.36, p < .05).

7.3.1. Effects in high involvement choice tasks

This experiment was designed to test the mechanism for secondary level effects. Given this purpose, alternatives were not designed to be equal in utility. Hence, neither a proportional (equal share) or utility model can be used as a comparison to test for primary level set configuration effects and no comparisons with a model are presented. Instead, tests for secondary level set configuration effects among competitor alternatives use comparisons between uniqueness and asymmetric dominance sets, as in Experiment 4. Choice of $\text{COMPETITOR}_{\text{D(Best)}}$ was higher in the moderately raised utility high involvement complex task with asymmetric dominance condition (Set 2, $Choice_{\text{asymmetric dominance}}$ = 25%) relative to the uniqueness condition (Set 1, $Choice_{\text{unique}}$ = 9%, $\chi^2(1, n = 81) = 3.85$, $p < .05$, *Cramer's V* = .22); suggesting a secondary level set configuration effect occurred. This difference was not observed in the high raised utility high involvement complex tasks or in any of the simple tasks (see Table 7-2).

TABLE 7-2:
Observed choice: high involvement

Choice set		Alternative							
		TARGET	*DECOY/ OTHER*	*DECOY/ OTHER*	*COMPETITORS*			*OTHERS*	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Moderate raised competitor utilities									
1	Complex UQ (n =45)	28.9%	0.0% (other)	2.2% (*other*)	8.9%[a]	2.2%	24.4%	8.9%	24.4%[b]
2	Complex AD (n = 36)	13.9%	0.0% (decoy)	13.9% (*decoy*)	25.0%[a]	11.1%	33.3%	2.8%	0.0%[b]
3	Simple UQ (n =36)	30.6%	0.0% (other)	-	22.2%	-	47.2%	-	-
4	Simple AD (n = 41)	36.6%	4.9% (decoy)	-	26.8%	-	31.7%	-	-
High raised competitor utilities									
5	Complex UQ (n = 39)	23.1%	2.6% (other)	0.0% (*other*)	23.1%	17.9%	17.9%	2.6%	12.8%
6	Complex AD (n = 44)	13.6%	2.3% (decoy)	2.3% (*decoy*)	22.7%	9.1%	27.3%	6.8%	15.9%
7	Simple UQ (n = 49)	32.7%	0.0% (other)	-	30.6%	-	36.7%	-	-
8	Simple AD (n = 45)	46.7%	2.2% (decoy)	-	28.9%	-	22.2%	-	-

NOTE.– "Moderate raised competitor utilities" refers to conditions in which competitor alternatives have utilities that are 10 higher than other viable alternatives. "High raised competitor utilities" refers to conditions in which competitor alternatives have utilities that are 20 higher than other viable alternatives. "UQ" = unique and "AD" = asymmetric dominance with two decoys in complex conditions and asymmetric dominance with one decoy in simple conditions. Alternative "D" = $\text{COMPETITOR}_{\text{D(Best)}}$, "G" = $\text{COMPETITOR}_{\text{G(Middle)}}$, and "A" = $\text{COMPETITOR}_{\text{A(Worst)}}$. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions. Whether C or F was a Decoy or Other alternative in a set is indicated where choice share is presented. All pairs with the same superscript letter are significantly different at the levels indicated below:

[a] $p<.05$

[b] $p<.001$ (*all chi square tests*).

Another alternative, OTHER_{H} (the cheapest alternative), was chosen more often in the moderate raised utilities complex task uniqueness condition (Set 1, $Choice_{\text{unique}}$ = 24%) relative to the asymmetric dominance with two decoys set (Set 2, $Choice_{\text{asymmetric dominance}}$ = 0%, $\chi^2(1, n = 81) = 10.18$, $p < .001$, *Cramer's V* = .36).

Because OTHER_{H} was not chosen in the asymmetric dominance condition, it was not possible to determine which factors other than set configuration influenced choice of OTHER_{H} between these two conditions. Furthermore, preferences-based regression models, as well as analysis of respondent provided justification for choice, did not provide insight into why certain respondents choose OTHER_{H} in the uniqueness condition.

7.3.2. Effects in low involvement choice tasks

There was no difference in choice of alternatives between comparable sets in the low involvement category (see Table 7-3). Again, the purpose of this experiment was to test for secondary level effects and not a primary level influence of uniqueness or asymmetric dominance on choice, so primary level effects were not expected. On the other hand, the cheapest alternative seems to have been a very popular alternative even though other alternatives with higher utilities existed in the sets. Alternative OTHER_{H} was the cheapest alternative in the complex task choice set configurations, whereas $\text{COMPETITOR}_{\text{A(worst)}}$ was the cheapest alternative in the simple task set configurations. In the low involvement conditions, the cheapest alternative in every condition except the high raised utilities simple task was chosen more often than any other alternative. Some respondents may have used a *choose the cheapest alternative* heuristic to make their choice in these conditions. 70% of respondents choosing OTHER_{H} in the complex task conditions indicated that price was the only or most important reason for their choice (versus 54% for next closest alternative, $\text{COMPETITOR}_{\text{A(Worst)}}$).[62] Price as the primary justification was found to be positively associated with choice of OTHER_{H} (sets 1-2 and 5-6, $r_{pb} = .42$, $n = 158$, $p < .001$, *one-tailed*) and not with choice of other alternatives in the complex task conditions.

[62] There was no difference in the percentage of respondents citing price as the primary reason for choice between the cheapest, $\text{COMPETITOR}_{\text{A(worst)}}$, and the next closest competitor in the simple tasks.

TABLE 7-3:
Observed choice: low involvement

Choice set		Alternative							
		TARGET	*DECOY/ OTHER*	*DECOY/ OTHER*	*COMPETITORS*			*OTHERS*	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Moderate raised competitor utilities									
1	Complex UQ (n =40)	7.5%	5.0% (other)	0.0% (*other*)	7.5%	15.0%	15.0%	5.0%	45.0%
2	Complex AD (n = 43)	14.0%	2.3% (decoy)	7.0% (*decoy*)	14.0%	16.3%	14.0%	4.7%	27.9%
3	Simple UQ (n =42)	26.2%	2.4% (other)	-	31.0%	-	40.5%	-	-
4	Simple AD (n = 49)	26.5%	2.0% (decoy)	-	26.5%	-	44.9%	-	-
High raised competitor utilities									
5	Complex UQ (n = 41)	7.3%	0.0% (other)	2.4% (*other*)	22.0%	9.8%	26.8%	2.4%	29.3%
6	Complex AD (n = 34)	11.8%	8.8% (decoy)	0.0% (*decoy*)	20.6%	5.9%	14.7%	2.9%	35.3%
7	Simple UQ (n = 41)	14.6%	2.4% (other)	-	51.2%	-	31.7%	-	-
8	Simple AD (n = 45)	15.6%	8.9% (decoy)	-	40.0%	-	35.6%	-	-

NOTE.– "Moderate raised competitor utilities" refers to conditions in which competitor alternatives have utilities that are 10 higher than other viable alternatives. "High raised competitor utilities" refers to conditions in which competitor alternatives have utilities that are 20 higher than other viable alternatives. "UQ" = unique and "AD" = asymmetric dominance with two decoys in complex conditions and asymmetric dominance with one decoy in simple conditions. Alternative "D" = $\text{COMPETITOR}_{\text{D(Best)}}$, "G" = $\text{COMPETITOR}_{\text{G(Middle)}}$, and "A" = $\text{COMPETITOR}_{\text{A(Worst)}}$. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions. Whether C or F was a Decoy or Other alternative in a set is indicated where choice share is presented. There was no significant difference in choice of alternatives between comparable sets in the low involvement category.

7.4. Discussion

Secondary level effects mechanism

The occurrence of a secondary level effect among moderately raised utility competitor alternatives supports the mechanism for secondary level set configuration effects

discussed in relation to Hypothesis H_4. I argued that salience of a non-considered dominating target alternative would influence choice among considered competitor alternatives; resulting in choice of the competitor alternative that was most favorable on the target attribute. By increasing the attractiveness of the competitor alternatives, it was more likely that respondents would consider these competitor alternatives and chose one of them. This seemed to be the case as more than half of respondents generally chose a competitor alternative; a higher percentage than observed in the other experiments in this study. Because they were considering the competitor alternatives, relationships among non-considered alternatives should not have influenced their choice. However, the competitor alternative that was more favorable on the target attribute was chosen more often in the presence of an asymmetric dominance relationship among non-considered alternatives relative to when no dominance relationship was present. Hence, it seems that secondary level set configuration effects exist and they can be explained by salience of a dominance relationship among non-considered alternatives.

The lack of secondary level set configuration effects in the high raised competitor utility conditions was not unexpected. The idea of raising the utility of the competitor alternatives was to increase consideration of the competitor alternatives to test the mechanism for secondary level effects. To increase the probability of a successful test, two different raised utility levels were used. It was thought that the moderately raised utilities might not be enough to increase consideration of competitor alternatives or that the highly raised utilities might be so high as to focus attention solely on the competitor alternatives, such that other alternatives were quickly eliminated from any processing in the choice task. Given the secondary level effect finding among moderately and not high raised utility alternatives, the latter seems to have been the case. The high raised utility competitor alternatives may have been so attractive to those considering them as to exclude other alternatives from processing in the choice. An implication of this finding is that secondary level effects may occur among fairly equally attractive alternatives, but not when competitor alternatives are too attractive.

Higher than expected choice of the target alternative

Although utilities were raised for competitors to make them more attractive than other alternatives, the Target alternative, TARGET_B, was chosen by approximately 30% of respondents across conditions (see Table 7-2). A review of preferences helps to explain why some respondents chose the Target. The Target is the most favorable alternative on the Target attribute (distance from campus) and relatively unfavorable on the Competitor attribute (number of students to share a bathroom with). A model including prior importance of distance, prior importance of bathroom sharing, and their interaction was a significant predictor of choice of TARGET_B, $\chi^2(3, n = 335) = 18.2$, $p < .001$, and explained between 5.3% (Cox & Snell R Square) and 7.6% (Nagelkerke R Square) of variance in choice of TARGET_B (see Table 7-4). This is does not explain much, but it does suggest that some respondents may have chosen the Target because they found distance, and not bathroom sharing to be important. In addition, the relatively high choice share for TARGET_B could also be due to uniqueness and asymmetric dominance sets increasing the perceived attractiveness of the Target alternative, leading to an increase in choice of the Target. As discussed earlier, however, this experiment was designed to test the mechanism for secondary level effects. As such, it was not possible to create a baseline (e.g. an equal proportions or RFC model) to compare choice of the Target with to determine if uniqueness or asymmetric dominance influenced choice of this alternative.

TABLE 7-4:
Regression predicting choice likelihood of TARGET_B

	B	S.E.	Wald	df	Significance	Odds Ratio	95,0% C.I. for Odds Ratio	
							Lower	*Upper*
Importance of Distance	0,693	2,164	0,103	1	,749	2,000	0,029	139,010
Importance of Bathroom	-5,335	1,874	8,100	1	,004	0,005	0,000	0,190
Importance of Distance X Importance of Bathroom	-36,932	21,215	3,031	1	,082	0,000	0,000	104,471
Constant	-1,092	0,149	53,391	1	,000	0,336		

NOTE.–"UQ" = uniqueness and "AD" = asymmetric dominance. Model prediction significance: $\chi^2(3, n = 335) = 18.2$, $p < .001$, Cox & Snell R Square = 5.3%, Nagelkerke R Square = 7.6%.

Low involvement category findings

As in previous experiments in this study, many respondents may have used a *choose the cheapest* heuristic in the low involvement conditions. In contrast to Experiment 3 and one product category in Experiment 4, however, a secondary level effect did not occur in the low involving, simple task conditions. The relatively small number of alternatives included in simple tasks relative to complex tasks may have made it easier to observe that the competitors were better alternatives. Because these alternatives were clearly better, respondents may not have compared information about the target alternative with their considered alternatives and the asymmetric dominance relationship would not have been detected. Hence, a secondary level effect would have been unlikely to occur.

The sum of experiments in this study suggests that set configuration effects occur in more complex choice tasks that typically researched. Furthermore, these effects seem to be moderated by involvement and task complexity. The next and final chapter will discuss the overall findings across the experiments in this study.

8. GENERAL DISCUSSION AND IMPLICATIONS

Previous studies of set configuration effects have generally focused on a trade-off among two attributes in simple sets containing two to three alternatives (e.g. Hamilton et al. 2007; Huber et al. 1982; Simonson 1989).[63] In contrast, many real world decisions are made from complex choice sets involving many alternatives and attributes. Bettman et al. (1998) have theorized that the presence of many alternatives and attributes (a complex task) is likely to limit set configuration effects. The authors argued that relationships among alternatives, such as asymmetric dominance, should be less salient for "problems of any complexity". Bettman et al. (1998) did not specify at which level of complexity this might occur, but did call for research on the effects of task complexity on set configuration effects (more specifically, the attraction effect). With few exceptions (cf. Kivetz et al. 2004; Lehmann and Pan 1994), this premise about the influence of complexity on set configuration effects has not been empirically tested. As such, I set out to determine if set configuration effects would occur in more complex choice tasks and if they would occur in more ways than previously observed.

Findings in this study suggest an influential role of uniqueness and asymmetric dominance in complex choice tasks. Collective results from the experiments in this study suggest that an alternative may be more likely to be chosen in a complex choice task (i.e. many alternatives and attributes) when it is unique in a set or dominates other alternatives. Furthermore, asymmetric dominance may be able to influence choice among considered alternatives even in cases where it seems that prior preferences may have first been used to screen alternatives. Table 8-1 lists the hypotheses developed in relation to these set configuration effects and whether each

[63] In studies where more than two attributes were used to describe alternatives; there was still only one trade-off, such as price versus overall quality. The number of alternatives was kept at two to three alternatives, whereas the provided attributes were price and a description of the alternatives indicating that they were of a certain level of quality. Trade-offs among non-price attributes would not have been necessary because choosing a higher quality alternative would entail gaining more or improved features without a loss on attributes other than price. For example, three cameras described on several attributes were used in a set configuration effects study by Simonson and Tversky (1992). Each camera varied in price ($169.99 vs. $239.99 vs. $469.99) and overall level of quality implied by the description (more or improved attributes as prices increased) of each camera. Hence, decisions in Simonson and Tversky's (1992) study can be considered a trade-off between price and quality.

was supported (not supported) across the five experiments. A summary of overall findings is listed by experiment in Table 8-2, along with the rationale for each experiment. The remainder of this chapter is a more thorough discussion of findings and their implications, including a complexity by involvement framework; limitations and future research directions; and managerial implications.

TABLE 8-1:
Summary of support for hypotheses

H_1	*being unique will lead to increased choice of an alternative in a complex choice task versus choice suggested by its utility*	***Supported***
H_2	*the presence of asymmetric dominance in a set will lead to increased choice of the dominating target alternative in a complex task versus choice suggested by its utility*	***Supported***
H_{3a}	*a need for justification will increase choice of a unique alternative relative to no need for justification in complex choice tasks*	***Supported***[64]
H_{3b}	*a need for justification will increase choice of an asymmetrically dominating target alternative relative to no need for justification in a complex choice task*	***Supported***
H_4	*an asymmetric dominance relationship among non-considered alternatives will increase choice of the considered alternative that is most favorable on the target attribute relative to the absence of an asymmetric dominance relationship*	***Supported***

[64] Support for hypotheses H_{3a} and H_{3b} was relatively weak.

TABLE 8-2:
Summary of experiments and main findings

Experiment	Primary purpose	Findings	Reason for follow-up experiment
1	• *Test primary level set configuration effects and moderating role of a need for justification in complex choice tasks* • *Explore secondary level set configuration effects*	• *Support for influence of uniqueness & asymmetric dominance on choice* • *Moderating role of Need for Justification weakly supported* • *Preliminary support for secondary level effect*	• *Hypothesis created for secondary level set configuration effects* • *Lack of pre-choice task measurement of preferences limited analysis of choices*
2	• *Test for secondary level effects* • *Improve baseline for comparisons by measuring preferences pre-choice task*	• *Support for primary & secondary level set configuration effects*	• *Experiments limited to single product in a complex & involving task*
3	• *Test influence of task complexity & involvement on set configuration effects*	• *Involvement & task complexity moderate the influence of set configuration on choice*	• *Use of aggregate level alternatives meant that alternatives differed in utility levels for each respondent* • *Only two product categories tested so far*
4	• *Increase sensitivity of set configuration effects testing using individualized alternatives* • *Increase generalizability of findings*	• *Support for secondary level effects among aggregate, but not individualized alternatives, regardless of product category*	• *Mechanism for secondary level set configuration effects not yet tested*
5	• *Test mechanism for secondary level set configuration effects*	• *Theorized mechanism for secondary level effects supported*	• *Possible future research directions discussed in limitations & future research section*

8.1. Set configuration effects in complex choice tasks

8.1.1. Primary level effects

Support was found for an influence of both asymmetric dominance and uniqueness on choice in complex tasks. The first experiment compared observed choice versus a proportional model (equal share) to provide an initial indication that uniqueness and asymmetric dominance increased choice of target alternatives. More sensitive tests of observed choice versus choice predicted by individual-level utilities in later experiments reinforced the notion that primary level set configuration effects were occurring. Observed choice of alternatives was expected to conform to preference utility estimates if the configuration of sets did not influence choice. However, a systematic pattern of deviation from predictions was observed for target alternatives in the uniqueness and asymmetric dominance conditions across experiments, suggesting that set configuration influenced choice. Hence, the occurrence of primary level set configuration effects based on uniqueness and asymmetric dominance was supported. Table 8-3 presents a summary of which experiments tested these effects and if they were supported.

TABLE 8-3:
Summary of set configuration effect findings in complex tasks

	Experiment				
	1	***2***	***3***	***4***	***5***
Primary level effect: *Uniqueness*	*Supported*	*Supported*	*N/A*	*Partially supported*	*N/A*
Primary level effect: *Asymmetric Dominance*	*Partially supported*	*Supported*	*Partially supported*	*Partially supported*	*N/A*
Secondary Level Effect	*Supported*	*Supported*	*Partially supported*	*Partially supported*	*Supported*

NOTE.–Results across the five experiments in this dissertation generally support the hypotheses that uniqueness and asymmetric dominance can influence choice in more complex tasks than typically researched. Furthermore, asymmetric dominance can also influence choice at a secondary level. "N/A"= not applicable.

With regard to uniqueness, research by Hamilton et al. (2007) suggested that increased choice of unique alternatives does not occur when justification is required. In contrast, I argued that choice of a unique alternative would be associated with more effortful processing in more complex choice tasks. This was tested using a need for justification, which has been found to promote effortful processing. The finding, although weak, that a need for justification increased the likelihood of choice of a unique alternative supports my contention that the influence of uniqueness on choice of a target alternative in complex choice tasks is due to more effortful, rather than intuitive processing.

Primary level effects were not generally observed in simple task conditions, regardless of involvement.[65] As discussed earlier, attraction and uniqueness effects have generally been observed in simple choice tasks. Not finding asymmetric dominance in the high involvement categories is in accordance with the research discussed earlier suggesting that increased involvement reduces the potential for attraction effects (Mishra et al. 1993). However, the lack of attraction effects in low involvement simple task conditions was surprising. These are the conditions in which primary level set configurations should have been most likely to be observed. It could be that choice was more difficult in the current study than in previous set configuration effects studies. In previous studies, choices have generally involved a trade-off on one attribute relative to one other attribute (i.e. there were only two attributes). In contrast, multiattribute trade-offs (among four attributes) were implied by the design of the simple choice tasks in the current study. Increased difficulty resulting from a higher number of trade-offs may have been enough to eliminate set configuration effects when respondents were not motivated by the task (low involvement conditions).

8.1.2. Secondary level effects

Results from the present study also suggest that asymmetric dominance can influence choice at a secondary level. Specifically, an asymmetric dominance relationship

[65] An attraction effect was observed only once in a simple choice task among all of the experiments in this study and no effect of uniqueness was observed.

among non-considered alternatives was repeatedly found to influence choice among considered alternatives (see Table 8-3 above). A meta analysis of tests across all of the experiments in this study establishes support for the existence of this secondary level set configuration effect in complex choice tasks with high involvement products. Choice of the competitor alternative that was most favorable on the target attribute was generally higher in the presence of asymmetric dominance relative to when no dominance relationship was present ($Choice_{\text{asymmetric dominance}} = 20.1\%$ vs. $Choice_{\text{control}} = 12.0\%$, $\chi^2(1, n = 631) = 5.75$, $p < .01$, *one-tailed*).[66] In prior set configuration effects research, consideration sets were created by default for respondents, with only two to three alternatives to chose from and little available information to process (i.e. alternatives described by two attributes). As such, a screening process to determine which alternatives to consider before making a choice would not likely have been carried out. Findings in the current study suggest that set configuration effects can occur even when consumers first use existing preferences to screen alternatives to create a set of considered alternatives. Furthermore, secondary level set configuration effects seem to require some relationship among at least two alternatives, such as asymmetric dominance, to influence choice among at least two other alternatives, as uniqueness sets did not appear to influence choice at a secondary level. This implies that a minimum of four presented alternatives is necessary to observe these secondary level effects. Hence, it would not have been possible to find support for secondary level effects in most previous set configuration studies. The presentation of many multi-attribute alternatives in the present study was better suited to the task of examining these secondary level effects.

8.1.3. A complexity by involvement framework

Results from across the experiments in this study suggest a framework based on complexity and involvement (see Table 8-4). This framework builds on previous

[66] In this meta analysis, the control condition was either a uniqueness or control set configuration, depending on the experiment, and the asymmetric dominance conditions were with two decoys. For experiment 1, both need for justification and no need for justification conditions were included. For experiments 2 and 3, the comparison was control versus asymmetric dominance. For experiment 4, individualized and aggregate alternatives conditions were included, as were both high involvement product categories. For experiment 5, medium and high raised competitor utilities conditions were included.

literature and findings from the present study. For example, work by Payne (1976) suggests that increased task complexity leads to the use of multiple choice strategies; notably noncompensatory for screening alternatives followed by a compensatory strategy to make a choice. Work by Petty et al. (1983) also suggests that consumers shift to more elaborate processing when motivated by the task. Research regarding set configuration effects has found that the configuration of the set can directly influence choice in simple choice tasks (Hamilton, Jiewen, and Chernev 2007; Huber, Payne, and Puto 1982; Pratkanis and Farquhar 1992; Simonson 1989; Tversky 1972; Yoon and Simonson 2008). Findings in the current study, and from a previous study (Kivetz et al. 2004), suggest that set configurations can also influence choice in more complex choice tasks than typically researched. Furthermore, findings in the current study suggest that involvement may moderate these effects. More specifically, the occurrence of primary level set configuration effects in higher involving complex choice tasks, but not lower involving decisions suggests a qualification of the Bettman et al.'s (1998) argument that set configuration effects will be reduced by increased task complexity. It appears that set configuration effects may occur in complex tasks when the decision is more highly involving and not when less involving. Alternatively, set configuration effects seem to be more likely to occur in simpler tasks when the decision is less involving and less likely when more involving. The framework below (Table 8-4) synthesizes the above findings into a complexity by involvement matrix highlighting likely set configurations influences and choice strategies in each section of the matrix.

TABLE 8-4:
A complexity by involvement set configuration effects framework

Task Complexity	Involvement: LOW	Involvement: HIGH
COMPLEX	• *Noncompensatory processing, simple heuristics*	• *Noncompensatory, followed by compensatory processing* • *Primary & secondary level set configuration effects*
SIMPLE	• *Noncompensatory processing, simple heuristics* • *Primary level set configuration effects*	• *Compensatory processing*

High involvement and complexity

As a task becomes more involving, consumers are likely to process more information and prefer compensatory to noncompensatory strategies as a means to choose the best, or optimal, alternative for them. However, increasing the number of alternatives to be evaluated reduces consumers' ability to process all information. When these two forces interact, consumers are limited in the amount of information they can process, but are still motivated to make a good choice. As suggested by prior research (Bettman et al. 1998; Klemz and Gruca 2003; Olshavsky 1979; Payne 1976), consumers may begin with a noncompensatory strategy to create a set of considered alternatives, followed by another strategy to make their choice when faced with complex choice tasks. In contrast to the assertion by Bettman et al. (1998) that attraction effects are less likely to occur in such tasks, findings of an influence of asymmetric dominance and uniqueness on choices in the current study suggest that set configuration effects can occur in complex choice tasks. These set configuration influences seem to be based on the relationships between alternatives being salient. Increased task complexity makes it more difficult to determine which alternative best

matches a consumer's preferences. Consumers may then be motivated to seek out cues to help them with their decision. Asymmetric dominance and uniqueness may provide such cues. It seems that both uniqueness and asymmetric dominance can be salient in complex choice tasks, as suggested by results showing that respondents both observed these relationships between alternatives in the first experiment and were more likely to choose the target alternative than predicted by preferences (utilities). For instance, as they are searching for information to aid their decision, consumers may detect the presence of asymmetric dominance and its associated good alternative (i.e. the dominating alternative): an attraction effect may occur. When prior preferences determine their set of considered alternatives, consumers may still be influenced by set configuration at a secondary level. They may have an idea of which alternatives to consider, but be uncertain of how to choose among them. When asymmetric dominance is present in the set, consumers may detect the presence of the good (i.e. target) alternative even if it is not one of their considered options. These consumers can then compare the good alternative with their considered alternatives. This comparison can emphasize the potential for a loss and leads to selection of the considered alternative that is closest to the good alternative on an important attribute; a secondary level effect.

When the task is less complex, on the other hand, consumers may have the cognitive resources available to employ compensatory processing and choose the alternative with the highest overall utility, as suggested by prior research (Bettman et al. 1998; Payne 1976). In addition, research by Mishra et al. (1993) suggests that attraction effects are less likely to occur as involvement increases because consumers become more motivated to make a good choice. Increased motivation implies consumers will be more likely to use a compensatory strategy to make a good choice in more involving choice tasks. Combining these two areas of research suggests consumers in a highly involving, simple choice task are likely to use compensatory processing. Support for compensatory processing in the current study was suggested by observed choice being in accordance with expected choice, an association between choice of alternatives and their utilities and no difference in choice of alternatives between asymmetric dominance and uniqueness conditions. Furthermore, with few exceptions, simple heuristics, such as *choose the cheapest alternative*, did not generally seem to

occur for high involvement categories in this study. This is an additional indication that respondents were expending some cognitive effort on the decision beyond resorting to some type of quick heuristic. Hence, set configuration effects may be unlikely to occur in highly involving, simple choice tasks and compensatory processing may be the norm.

Low involvement and complexity

In complex choice tasks that are less involving, consumers may be unwilling to expend the cognitive effort to process much information per alternative. Because they lack the motivation, they may not make the comparisons between alternatives necessary for uniqueness or asymmetric dominance to be salient. Instead, they may tend to use simple heuristics that require minimal effort to make a decision. For instance, the cheapest alternative was generally the most chosen alternative in low involving, complex choice tasks regardless of whether respondents prior preferences favored that alternative. Analyses of stated justifications for choice indicated that more respondents choosing the cheapest alternative were motivated primarily by price relative to respondents choosing other alternatives. This suggests respondents used a lexicographic strategy based on price to determine their choices. There also seemed to be several instances of respondents apparently using a *choice the cheapest alternative* strategy in the low involving simple tasks. This was indicated by higher than expected choice of the cheapest alternative and an analysis of respondents stated reasons for choice. In contrast to the more complex tasks, however, primary level set configuration effects should occur in low involving, simple choice tasks.[67] Regardless of not being observed in this experiment, set configuration effects have often been observed in simple tasks with few alternatives (Hamilton et al. 2007; Huber and Puto 1983; Mishra et al. 1993; Simonson 1989). Hence, it is reasonable to assume that primary level set configuration effects occur in low involving, simple choice tasks. Regarding secondary level effects, preliminary support was found for a secondary level effect in low involving decisions from among few alternatives in Experiment 3.

[67] Not finding set configuration effects in this instance in the current study is discussed earlier in this chapter.

However, no support for a secondary level effect in simple tasks was found in Experiments 4 and 5; calling the preliminary finding into question.

8.2. Limitations and future research

8.2.1. Sensitivity of effects to set configuration

It seems that consumers in some cases may process information about alternatives they're not considering to help determine which of their considered alternatives to choose. While the existence of such secondary level effects was established by the sum of results across the experiments in this study, these effects were sensitive to the configuration of the set. For example, secondary level effects disappeared in low involving categories, among equality attractive individualized alternatives and when the dominating alternative may have been seen as an attractive compromise option. Future research should pay considerable attention to the design of set configurations intended to generate set configuration effects. Additionally, asymmetric dominance relationships promoted secondary level effects, whereas uniqueness set configurations did not. These small number of set configurations examined here are not representative of all set configurations known to influence choice. There are additional set configurations that might or might not lead to secondary level set configuration effects, such as phantom decoys (Pratkanis and Farquhar 1992) and compromise alternatives (Simonson 1989). The presence of a phantom decoy could, as in the case of asymmetric dominance, lead to identification of a good, albeit unavailable, alternative that could be used to influence choice at a secondary level. A compromise alternative, on the other hand, might be expected to be chosen, rather than influence choice at a secondary level. There were instances in the current study where alternatives may have been seen as a compromise and were chosen instead of helping generate secondary level effects. Secondary level set configurations effects were also not observed in a study of compromise effects in somewhat complex choice tasks by Kivetz et al. (2004), although secondary level effects were not considered in the design of their experiments. Hence, research using other set configurations would be a natural extension to the present study.

In addition to other set configurations, the attributes used to create Target and Competitor alternatives should also be further explored. The design of the low involvement product categories differed from the high involvement categories in this study. For the high involvement categories, the target attribute was the most-important non-price attribute and the Competitor attribute was the second most-important non-price attribute.[68] In the low involvement categories, however, the attributes used to create Target and Competitor attributes were not used in the same combination of most- and second most-important non-price attributes. For example, it often made sense to use brand as the Competitor attribute in the low involvement categories, even though brand might not have been the most- or second most-important non-price attribute. Perhaps using attributes that were not among the most important in some cases made trade-offs easier (i.e. the tradeoff involved an important attribute vs. a not-as-important attribute). An easier tradeoff might have lessened the need for respondents to use set configuration cues to help them make a choice. Hence, not using the same combination of important attributes as used in the high involvement categories could have hindered set configuration effects in the low involvement categories. This design difference might help account for why a secondary level effect was observed in a low involvement category in one experiment in this study, but not others, and why primary level set configuration effects were generally not observed in the low involving conditions (where they were most expected). For example, given the less involving nature of these decisions, respondents may have seen their choice as a tradeoff of the very important price attribute vs. a not as important other attribute. This could help to explain why many respondents appeared to use a lexicographic, *choose the cheapest alternative* strategy in the low involvement conditions. Future research might test different combinations of attributes in creating Target and Competitor attributes to potentially improve the odds of observing primary and secondary level set configuration effects in low involvement choice tasks.

[68] There was one exception in the first experiment, where the Target attribute was tested using both the most-important non-price attribute and the second most-important non-price attributes.

8.2.2. Improving comparisons

It was difficult to develop a control for direct comparisons between conditions in this study, as any set configuration might be expected to influence choice to some degree. Therefore, equal share (proportional) and Randomized First choice (RFC) models were used to compare observed choices with. This technique has its basis in similar techniques employed early in set configuration effects research (Huber and Puto 1983). The authors of that study found that asymmetric dominance increased choice of a dominating alternative compared with proportional and fixed utility models. Although using a choice model as a control is defendable, this type of control is still not a direct comparison of one experimental condition versus another. Future research should address this issue by improving on the ability to directly compare experimental conditions in testing for set configuration effects in complex choice tasks.

8.2.3. Significant findings despite small sample sizes

The relatively small number of respondents choosing each alternative was both a strength and limitation in this study. With cell sizes of up to 70 respondents, the relatively high number of alternatives used to create complex tasks meant that any single alternative was chosen a maximum of 15 times in any set. Because of the limited number of choices observed for an alternative in any given condition, effect sizes needed to be fairly large before they could be detected in analysis. In some cases, for instance, choice share of 8% for an alternative in one condition was not significantly different from 22% share in another condition. Additionally, student housing, microwave ovens, heat pumps and blenders were the only categories tested in the present study. Few categories per experiment (generally two categories) were used because eliciting preferences for a single product category takes several minutes for respondents and can become tedious due to the repetitive nature of the conjoint task. However, using more categories would have allowed for rolling up results to be analyzed in aggregate across several product categories. This has often been done in set configuration effects research regarding simple choice tasks where the potential for respondent fatigue may be less of an issue (Hamilton et al. 2007; Huber and Puto 1983; Simonson 1989). Hence, more respondents or the ability to analyze results across several product categories might have rendered more differences significant.

On the other hand, the findings in this study are strengthened by the fact that they were significant, despite the relatively small numbers. Effects had to be nontrivial in size before they could be deemed significant. Nevertheless, the use of more categories and/or respondents would increase statistical power and potentially generalizability in future studies.

8.2.4. Process tracing to better understand mechanisms

Another limitation of this study is that it primarily uses observed behavior to infer processes without a process tracing technique to follow cognitive processing by respondents as they make their choice. Explanations for some of the findings herein have been based on beliefs about the choice process being employed at various stages, supported by analysis of behavior. A more direct cognitive measurement technique would provide a richer analysis and triangulation in determining the choice processes involved in set configuration effects. Using a process tracing technique, such as think-aloud protocols (Payne 1976) or eye-tracking (Rosen and Rosenkoetter 1976; Van der Lans et al. 2008), or a combination of eye movements and verbal protocols, as suggested by Smead, Wilcox, and Wilkes (1980), might provide further insight into the choice strategies respondents employ in different contexts. The present study used pre-choice task measures of preferences to infer choice processes. This is different from prior choice set configuration effect studies, as attribute preferences have not typically been measured prior to experimental manipulations. Thus, measurement of preferences before the choice task allowed for a better understanding of the processes being used by individual respondents. While useful, this type of analysis still does not directly measure cognitive processes. Research incorporating process tracing techniques in addition to techniques used in the present study should increase understanding of the mechanism for secondary level set configuration effects.

8.2.5. Moderating role of risk

Perceived risk might moderate the set configuration effects observed in this study. Two aspects of perceived risk that have been identified in consumer research are the consequences of making a poor decision and uncertainty (Campbell and Goodstein

2001). As perceptions of risk increase, consumers may become more risk averse (Campbell and Goodstein 2001). It is conceivable that increased risk aversion might lead consumers to seek out more cues to aid decision-making in high involving and complex decisions.

Popularity. Perceived popularity of an alternative could be used as a cue to avoid the consequences of making a poor decision. One of the arguments used by Huber et al. (1982) in their research regarding attraction effects, was that the perception of popularity might increase choice of an alternative. It is conceivable that manipulating the perceived risk associated with a decision could lead to a role for popularity. One way to manipulate perceived risk is to alter the usage occasion. For example, in a congruence study by Campbell and Goodstein (2001), the perceived risk of a wine purchase was manipulated by asking respondents in the low-risk condition to imagine they were going to buy a bottle of wine to drink at home, whereas in the high-risk condition respondents were told to imagine they were buying wine for a dinner with a potential employer. In such a high risk context, consumers might be influenced by the popularity implied by the presence of similar alternatives (e.g. a target and its decoys). If consumers perceived similarity as an indication of popularity, they might consider the popular alternatives as a risk reducing strategy. Consumers might believe that if there are similar alternatives they must be good; otherwise the market wouldn't support their combined presence.

Ambiguity. Ambiguity might also influence choice in complex sets by triggering greater uncertainty. The attributes used in this study were meant to be unambiguous to ensure that respondents clearly understood the attributes and could judge trade-offs. For example, in the housing conditions, the benefits of being close-to-campus or having a private-bathroom are easy to comprehend. More ambiguous attributes, such as aspects of quality, might make trade-offs more difficult to evaluate and increase uncertainty regarding making an incorrect or suboptimal choice. Such cases might make it more difficult to evaluate alternatives and lead to greater use of set configuration to aid choice-making. Thus, larger set configuration effect sizes might occur when alternatives are described by ambiguous attributes.

8.3. Managerial Implications

The existing set configuration effects literature provides excellent guidance on how to increase sales of target alternatives in cases where customers are presented with few alternatives to considered for choice. This guidance is lacking in situations where consumers must make a choice from among many alternatives. Findings in the current study suggest that asymmetric dominance and uniqueness can influence choice among many alternatives. However, careful attention needs to be paid to the choice set, as certain configurations among non-considered alternatives can influence choice among considered alternatives. Below are two examples of how set configuration effects may be harnessed by retailers and manufacturers/brands in complex choice tasks for more highly involving products.

Retailers. Imagine a retailer has a goal of improving its margins by increasing sales of LED-LCD televisions. At the time of this writing, LED-LCD televisions were more technologically advanced and expensive than other types of TVs, such as LCD and Plasma. It is reasonable to expect that the different models of LED-LCD TVs would be fairly equal in utility (otherwise they would dominate or exit the market) and compete on aspects, such as screen size, design, sound and picture quality, energy efficiency, etc. Assume the competition is fairy equal in utility and that higher energy efficiency is associated with higher prices. The retailer might decide to carry a particularly expensive LED-LCD television that is equal on energy efficiency to the currently offered LED-LCD TV with the greatest energy efficiency, but more expensive (i.e. a decoy alternative). Although very few customers would purchase this more expensive TV, its presence would call attention to the most energy efficient LED-LCD TV that was more appropriately priced (i.e. the target alternative). The retailer would likely see an increase in sales of the target LED-LCD television and, hopefully, better margins due to the higher price for energy efficient TVs. Additionally, the retailer might gain a few sales of the more expensive model among a small segment of price insensitive consumers. In addition to this primary level effect, the retailer might observe a secondary level effect of increased choice of regular LCD TVs that are more energy efficient; thus further improving margins. Alternatively, perhaps a retailer carries two products that are similar on an important attribute(s) and

customers are equally attracted to the two alternatives (i.e. they are equal in utility). Discontinuing the less profitable product might lead to increased sales of the remaining more profitable product because its uniqueness generates increased attention.

Manufacturers/Brands. A manufacture might introduce a decoy to increase sales of a target product, while also intending to increase the importance of the target attribute in general. Image a manufacturer of a bike brand who uses scandium to build its bike frames. Scandium is a form of aluminum that can be used to make lighter bike frames than the standard aluminum alloys and can offer better ride characteristics. Because of these properties, and that scandium is much more rare, scandium frames are more expensive the standard aluminum alloys and are a reasonable substitute for much more expensive carbon fiber frames. However, Scandium represents a small proportion of bike sales in the market. This manufacture might offer a scandium mountain bike in two versions at the same price: the bike with standard parts, but is priced too high versus the same bike with parts known for being lightweight for use in racing (with the price perceived as appropriate). This might affect sales in two ways. First, this should create an attraction effect that increases sales of the bike in general. Second, the increased attention to these scandium bikes might increase attention to scandium frames. This increased attention to scandium frames could also increase sales of the brand's road bikes with scandium frames relative to competing bikes with standard aluminum frames. Alternatively, if a brand introduces a decoy to increase sales of its target bike and generate secondary level effects, a competitor might alter its product in such a way that it appears to become a compromise option; thus negating the effects of the introduced decoy.

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10. APPENDICES

10.1. Experiment 1 alternatives

Alternatives included in choice sets

Set	*n*	Included Alternatives								
		1	2	3	4	5	6	7	8	9
1	67	HH	CP	RH	HT	WP	BH	AT	EP	CH
2	69	HH	CP	RH	HT	DP	BH	AT	EP	CH
3	27	HH	CP	RH	HT	DP	FT	AT	EP	CH
4	40	HH	CP	RH	HT	WP	BH	AT	MP	LH
5	38	HH	CP	RH	HT	WP	BH	AT	BP	LH
6	37	HH	CP	RH	HT	WP	BH	AT	BP	SH
7	36	HH	CP	RH	HT	WP	BH	AT	EP	CH
8	70	HH	CP	RH	HT	DP	BH	AT	EP	CH
9	39	HH	CP	RH	HT	DP	BH	FT	EP	CH

NOTE.–Included alternatives are listed by their codes, as defined below.

Description of alternatives

Code	Name	Size	Dist	Bath	Rent	Utility*	Notes
AT	Arlington Tower	21	20	3	3 750	9,48	Switch out for FT (Dist)
BH	Bowden Tower	21	40	2	2 450	9,47	Switch out for FT (Dist)
BP	Beacon Place	20	35	0	4 650	8,09	Decoy (bath dominance)
CH	Campbell House	19	15	0	5 600	9,45	Switch out for LH & SH (Bath)
CP	Cowley Place	16	25	3	2 800	9,44	Always included
DP	Devon Place	11	0	2	5 850	8,13	Decoy (dist)
EP	Eastern Place	20	35	0	3 850	9,49	Switch out for MP & BP (Bath)
FT	Fullerton Tower	15	0	3	5 750	8,10	Decoy (dist)
HH	Headington House	11	20	1	3 800	9,44	Always included
HT	Hawthorn Tower	14	0	2	5 400	9,46	Target - DISTANCE
LH	Longwood House	20	15	1	5 200	9,41	Decoy (bath no-dominance)
MP	Madison Place	18	15	3	3 900	9,48	Decoy (bath no-dominance)
RH	Reading House	18	25	0	4 600	9,42	Target - BATH
SH	Sturbridge House	19	20	0	5 900	8,12	Decoy (bath dominance)
WP	Waverley Place	18	25	1	4 050	9,46	Switch out for DP (Dist)

*Utility weights were determined using traditional conjoint analysis ranking task to elicit preferences. Alternatives were each given a fictitious name and described along four attribute: the size of the apartment in square meters (Size); distance from campus of 0 minutes, referred to as walking-distance, up to 40 minutes by bus (Dist); number of students to share a bathroom with, from none to 3 (Bath); and the monthly rental price in Norwegian Kroner (Rent).

10.2. Experiment 1: sample stimuli

Headington House (HH)	
Romstørrelse:	11 m^2
Dele bad med:	1 student
Avstand fra universitetet:	20 min. buss
Husleie (per måned):	kr. 3 800

Fullerton Tower (FT)	
Romstørrelse:	15 m^2
Dele bad med:	3 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 5 750

Devon Place (DP)	
Romstørrelse:	11 m^2
Dele bad med:	2 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 5 850

Campbell House (CH)	
Romstørrelse:	19 m^2
Dele bad med:	0 studenter
Avstand fra universitetet:	15 min. buss
Husleie (per måned):	kr. 5 600

Hawthorn Tower (HT)	
Romstørrelse:	14 m^2
Dele bad med:	2 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 5 400

Eastern Place (EP)	
Romstørrelse:	20 m^2
Dele bad med:	0 studenter
Avstand fra universitetet:	35 min. buss
Husleie (per måned):	kr. 3 850

Cowley Place (CP)	
Romstørrelse:	16 m^2
Dele bad med:	3 studenter
Avstand fra universitetet:	25 min. buss
Husleie (per måned):	kr. 2 800

Arlington Tower (AT)	
Romstørrelse:	21 m^2
Dele bad med:	3 studenter
Avstand fra universitetet:	20 min. buss
Husleie (per måned):	kr. 3 750

Reading House (RH)	
Romstørrelse:	18 m^2
Dele bad med:	0 studenter
Avstand fra universitetet:	25 min. buss
Husleie (per måned):	kr. 4 600

Abbreviated Dictionary

Avstand fra universitetet: .....Distance from campus

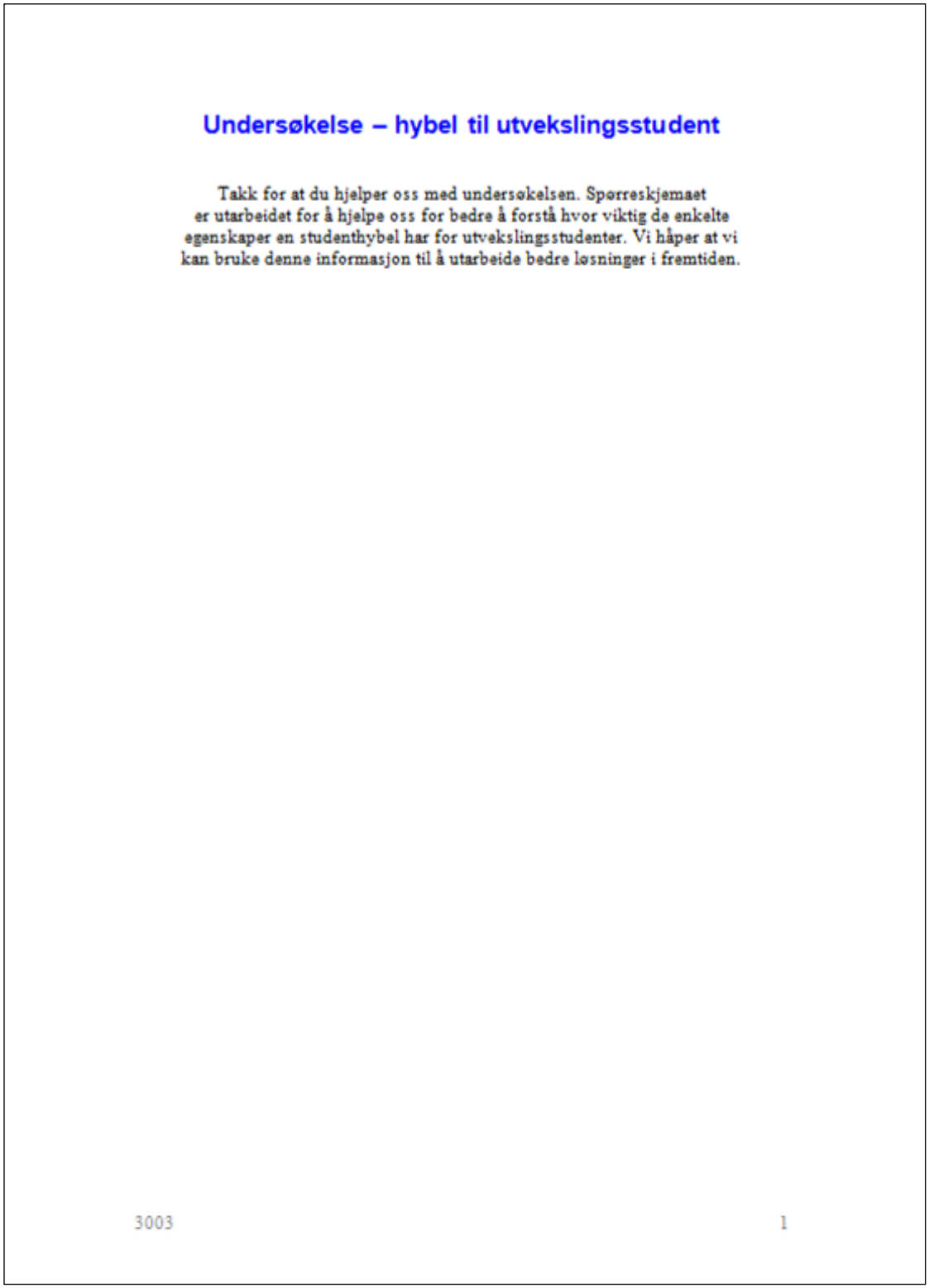
Dele bad med: .....Share bathroom with

Husleie (per måned): .....Rent per month

Kort spasetur: .....short walk

Romstørrelse: .....Room size

10.3. Experiment 1 example survey pages



Undersøkelse – hybel til utvekslingsstudent

Takk for at du hjelper oss med undersøkelsen. Spørreskjemaet er utarbeidet for å hjelpe oss for bedre å forstå hvor viktig de enkelte egenskaper en studenthybel har for utvekslingsstudenter. Vi håper at vi kan bruke denne informasjon til å utarbeide bedre løsninger i fremtiden.

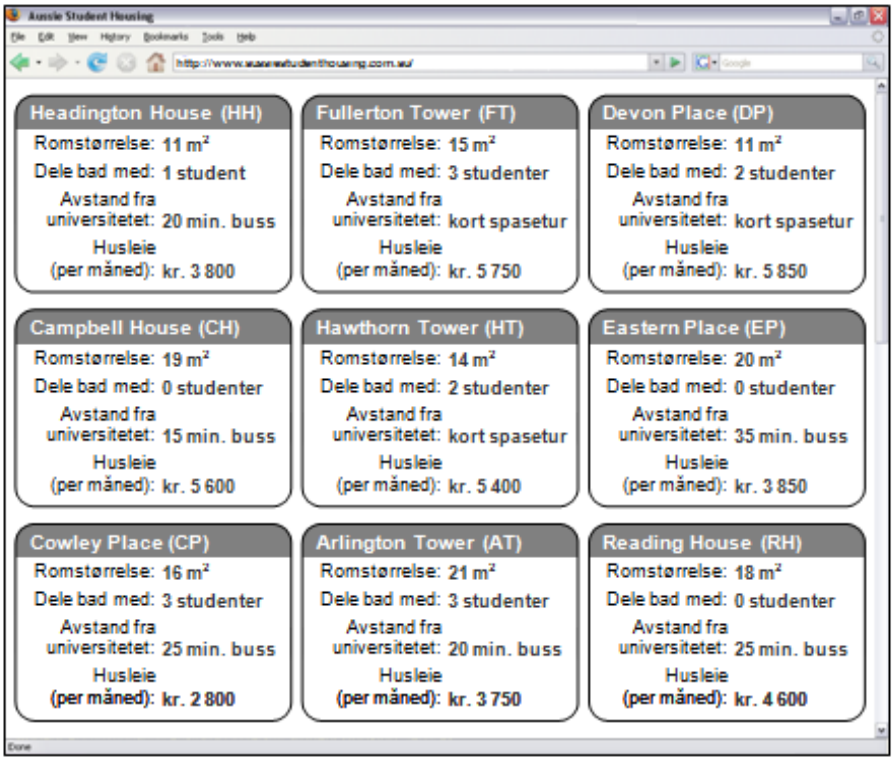
3003 1

Tenk deg at du har bestemt deg for å ta et semester på en skole i Melbourne, Australia. Du har fylt ut alle nødvendige skjemaer og har blitt akseptert av skolen. Skolen har meddelt at du må bestemme deg for studenthybel snarest mulig for at de skal kunne garantere rom før semesteret begynner. Du vil snart få presentert 9 alternative studenthybler (rom med felles kjøkken) som du kan velge mellom. Alternativene er beskrevet ved 4 egenskaper:

- Romstørrelse
  - Romstørrelser kan variere fra $10m^2$ til $21m^2$
- Avstand til universitetsområde
  - Angir hvor lang tid det tar å reise til universitetsområdet fra leiligheten
  - Avstand kan variere fra en kort spasertur, til 15- 40 minutt med buss
- Delt bad
  - Fordi du skal bo i et delt leilighet, må du ofte dele bad med andre studenter
  - Antall studenter som du må dele badet med kan variere fra 0 til 3 andre studenter
- Husleie
  - Angir hvor mye du må betale i husleie per måned, omgjort til norske kroner
  - Husleien kan variere fra cirka kr. 2 500,- til kr. 6 000,- per måned

Bla om til neste side...

Under presenteres 9 hybelalternativer. Vær vennlig og se nærmere på alternativene før du besvarer de etterfølgende spørsmålene.



Vennligst svar på de følgende spørsmålene ved å sette en ring rundt det hybelalternativet eller de hybelalternativene som passer best. **Vi vil spørre deg om årsakene for ditt valg på slutten av dette spørreskjemaet.**

	Hybel kode:
Hvilke hybler kan du tenke deg å leie? (sett ring rundt alle aktuelle hybelalternativer):	HH FT DP CH HT EP CP ATRH
Hvilke hybler er akseptable for deg? (sett ring rundt alle aktuelle hybelalternativer):	HH FT DP CH HT EP CP ATRH
Hvis du skulle leie en av hyblene, hvilken ville du ha valgt? (sett ring rundt ***ETT*** alternativ):	HH FT DP CH HT EP CP ATRH

Bla om til neste side...

Hvor vanskelig var det å velge blant de ulike hybelalternativer? *(sett ring rundt det svaralternativet som best beskriver din oppfatning fra 1 (veldig vanskelig) til 7 (veldig lett)):*

Veldig vanskelig						*Veldig lett*
1	**2**	**3**	**4**	**5**	**6**	**7**

Vennligst svar på de følgende spørsmålene ved å sette en ring rundt det tallet som passer best:

	Hvor lik er denne hybelen i forhold til de andre alternativene?							Hvordan vil du vurdere denne hybelen sammenlignet med de andre alternativene?						
	Svært Ulik						*Svært Lik*	*Svært Ufordelaktig*						*Svært Fordelaktig*
Headington House (HH)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Fullerton Tower (FT)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Devon Place (DP)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Campbell House (CH)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Hawthorn Tower (HT)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Eastern Place (EP)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Cowley Place (CP)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Arlington Tower (AT)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Reading House (RH)	1	2	3	4	5	6	7	1	2	3	4	5	6	7

Bla om til neste side…

3003 4

NOTE.–This scale measuring choice difficulty was in reverse order in the survey (i.e. from 1 “very difficult”(*Veldig vanskelig*) to 7, “very easy”(*Veldig lett*)). The order was reversed in the data file to simplify analysis and interpretation.

	Denne hybelen skiller seg ut ifra de andre alternativene							Vurder kvaliteten til hver hybel							Vurder hvor attraktiv du finner de ulike hyblene						
	Helt Uenig						*Helt Enig*	*Svært Dårlig*						*Svært Bra*	*Ikke Attraktiv*						*Svært Attraktiv*
Headington House (HH)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Fullerton Tower (FT)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Devon Place (DP)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Campbell House (CH)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Hawthorn Tower (HT)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Eastern Place (EP)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Cowley Place (CP)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Arlington Tower (AT)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Reading House (RH)	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

Vennligst indikerer hvor viktig de ulike egenskaper er for din rangering av alternativene ved å sette en ring rundt det svaralternativet som best beskriver din oppfatning fra 1 (ikke viktig) til 7 (veldig viktig) for hver egenskap.

Egenskap	*Ikke viktig*						*Veldig viktig*
Romstørrelse	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Avstand fra universitetsområde	**1**	**2**	**3**	**4**	**5**	**6**	**7**
antall studenter du må dele bad med	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Husleie	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Bla om til neste side...

Vennligst indiker... (sett ring rundt det alternativet som best beskriver din oppfatning)

Minst akseptable romstørrelse	10m²	12m²	14m²	16m²	18m²	20m²+
Lengste akseptable avstand fra universitetsområdet	Kort spasetur	15 min. buss	20 min buss		25 min. buss	30 min.+ buss
Max antall studenter du kan tenke deg å dele bad med	0		1		2	3+
Høyeste husleie du er villig til å betale	2 500	3 000	3 500	4 000	5 000	6 000+

Vennligst svar på de følgende spørsmålene ved å sette en ring rundt det tallet som best beskriver din oppfatning:

	Helt Uenig						*Helt Enig*
Jeg er sikker på at jeg valgte den beste hybelen blant de ulike alternativene.	1	2	3	4	5	6	7
Når jeg valgte hybel, lurte jeg på hva som ville ha skjedd hvis jeg valgte en annen hybel.	1	2	3	4	5	6	7
Når jeg valgte hybel, var jeg nysgjerrig på hva det ville innebære å velge en annen hybel.	1	2	3	4	5	6	7
Jeg var bekymret for at andre skulle forvente at jeg ville foreta en mer omfattende vurdering og derfor et bedre valg.	1	2	3	4	5	6	7
Selv etter at jeg hadde funnet et godt hybelalternativ var jeg redd for at jeg hadde oversett et enda bedre alternativ.	1	2	3	4	5	6	7
Når jeg valgte hybel, lurte jeg på om jeg ville likt en annen hybel bedre.	1	2	3	4	5	6	7

Vennligst skriv 1 til 5 grunner om hvorfor du foretrekker den hybelen du valgte:

1) _____

2) _____

3) _____

4) _____

5) _____

Du er nå ferdig med undersøkelsen. Takk for at du var med.

10.4. Experiment 1: choice share by set configuration

Number of observed choices for each alternative in each choice set

Alternative	Choice set									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
AT	10	11	2	6	6	6	3	10	0	**54**
BH	1	2	0	1	1	2	2	1	0	**10**
BP	0	0	0	0	0	1	0	0	0	**1**
CH	4	10	7	0	0	0	1	9	4	**35**
CP	12	9	2	7	5	4	7	8	4	**58**
DP	0	1	1	0	0	0	0	1	0	**3**
EP	8	9	3	0	0	0	11	15	8	**54**
FT	0	0	0	0	0	0	0	0	0	**0**
HH	8	7	2	3	8	6	1	10	11	**56**
HT	14	15	6	2	3	3	4	10	5	**62**
LH	0	0	0	5	2	0	0	0	0	**7**
MP	0	0	0	7	0	0	0	0	0	**7**
RH	5	5	4	6	8	7	4	6	7	**52**
SH	0	0	0	0	0	2	0	0	0	**2**
WP	5	0	0	3	5	6	3	0	0	**22**
Total	**67**	**69**	**27**	**40**	**38**	**37**	**36**	**70**	**39**	**423**

Choice share by % for each alternative in each choice set

Alternative	Choice set								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
AT	15%	16%	7%	15%	16%	16%	8%	14%	
BH	2%	3%		3%	3%	5%	6%	1%	0%
BP					0%	3%			
CH	6%	15%	26%				3%	13%	10%
CP	18%	13%	7%	18%	13%	11%	19%	11%	10%
DP		1%	4%					1%	0%
EP	12%	13%	11%				31%	21%	21%
FT			0%						0%
HH	12%	10%	7%	8%	21%	16%	3%	14%	28%
HT	21%	21%	22%	5%	8%	8%	11%	14%	13%
LH				13%	5%				
MP				18%					
RH	8%	7%	15%	15%	21%	19%	11%	9%	18%
SH						5%			
WP	8%			8%	13%	16%	8%		

10.5. Experiment 1: similarity ratings by alternative

Alternative	# of MINPA alternatives	MINPA Conditions			
		NFJ *(sets 1 & 3, n=94)*		**No NFJ** *(sets 7 & 9, n=75)*	
		M	*SE*	*M*	*SE*
AT	1	3,6	*0,14*		
BH	1			4,7	*0,24*
CH	1	4,6	*0,23*	4,8	*0,21*
CP	1	4,0	*0,15*	4,1	*0,19*
EP	1	4,0	*0,20*	3,7	*0,19*
HH	1	4,2	*0,16*	4,3	*0,25*
HT	1	**4,7**	*0,20*	**5,3**	*0,22*
RH	1	3,8	*0,13*	3,5	*0,15*
AT	3	4.1	*0.18*		
BH	3			5.1	*0.21*
CH	3	4.9	*0.22*	4.4	*0.2*
CP	3	5.0	*0.22*	4.3	*0.24*
EP	3	4.8	*0.19*	4.6	*0.19*
HH	3	4.3	*0.25*	4.2	*0.2*
HT	3	**3.8**	*0.14*	**3.5**	*0.22*
RH	3	4.4	*0.2*	4.2	*0.17*

Alternative	# of AINPA alternatives	AINPA Conditions	
		Dominance *(sets 4 & 6, n=94)*	
		M	*SE*
AT	1	3,9	*0,22*
BH	1	5,0	*0,23*
CP	1	4,3	*0,20*
HH	1	4,2	*0,21*
HT	1	4,9	*0,23*
RH	1	**4,8**	*0,29*
WP	1	3,3	*0,21*
AT	3	3.9	*0.19*
BH	3	4.8	*0.17*
CP	3	4.0	*0.2*
HH	3	4.5	*0.22*
HT	3	5.0	*0.22*
RH	3	**4.0**	*0.19*
WP	3	3.4	*0.17*

NOTE.–"MINPA" = most-important non-price attribute and "AINPA" = another important non-price attribute. *M* is for mean and *SE* is for standard error. Means for the target alternative in each group are in **bold**. The target alternative is among the most unique alternatives when there is only one target, and among the least unique when there are 2 decoys (or targets) added. "NFJ" = need for justification. Only alternatives that were included in all MINPA sets or all AINPA sets are shown.

10.6. Experiment 1: mean favorability by alternative

Alternative	Need for Justification, MINPA		No Need for Justification, MINPA		Dominance, AINPA	
	UQ MINPA alternative (set 1, n = 67)	*AD MINPA alternatives (set 3, n = 27)*	*UQ MINPA alternative (set 7, n = 36)*	*AD MINPA alternatives (set 9, n = 39)*	*UQ AINPA alternative (set 4, n = 40)*	*UQ AINPA alternatives (set 6, n = 37)*
AT	4.01	3.54	4.04		4.13	4.21
BH	2.83		3.36	2.85	2.70[a]	3.37[a]
BP	4.30					4.26
CH	4.24	4.59	3.90[b]	4.55[b]		
CP	3.91[c]	3.29[c]	4.12	3.91	3.63	3.76
DP		3.55		3.73		
EP	4.21	3.64	4.61	4.41		
FT		3.61		3.33		
HH	3.96[d]	3.25[d]	3.76[e]	4.45[e]	3.94	3.86
HT	4.58	4.29	3.79	4.36	4.21	4.32
LH					4.04	
MP					4.26	
RH	4.29	4.23	4.66	4.79	4.51	4.83
SH	4.54					4.21
WP	4.03		4.24		3.95[f]	4.49[f]

Note.–"MINPA" = most-important non-price attribute and "AINPA" = another important non-price attribute. Numbers in this chart are mean favorability ratings. "UQ" = uniqueness sets and "AD" = asymmetric dominance sets with 2 decoys. Significance is compared by set configuration manipulations. All pairs with the same superscript letter are significantly different at $p<.05$.

10.7. Experiment 2 Surveys

10.7.1. Experiment 2: example survey pages – time 1

Undersøkelse – hybel til utvekslingsstudent

Takk for at du hjelper oss med undersøkelsen. Spørreskjemaet omhandler betydninger av ulike egenskaper ved valg av studenthybler for utvekslingsstudenter. Vi håper at vi kan bruke denne informasjonen til å utarbeide bedre løsninger i fremtiden.

Ditt studentnummer*:

Pass på at du skriver nummeret ditt riktig siden du må bruke det igjen til å logge på spørreskjema 2 om cirka en uke for å bli med i trekningen om 20 iPod Shuffles.

*Studentnummeret ditt vil ikke bli brukt til å se hva du har svart. Det blir kun brukt til å koble de to spørreskjemaene sammen og til å identifisere iPod Shuffle vinnere.

Neste

Tenk deg at du har bestemt deg for å ta et semester på en skole i Melbourne, Australia. Du har fylt ut alle nødvendige skjemaer og har blitt akseptert av skolen. Skolen har meddelt at du må bestemme deg for studenthybel snarest mulig for at de skal kunne garantere rom før semesteret begynner. Basert på denne situasjonen, ber vi deg om å vurdere forskjellige studenthybler med følgende egenskaper:

Romstørrelse	• Romstørrelser kan variere fra 10m2 til 25m2
Avstand til universitetsområde	• Angir hvor lang tid det tar å reise til universitetsområdet fra leiligheten • Avstand kan variere fra en kort spasertur, til 40 minutter med buss
Delt bad	• Fordi du skal bo i et delt leilighet, må du ofte dele bad med andre studenter • Antall studenter som du må dele badet med kan variere fra 0 til 4 andre studenter
Husleie	• Angir hvor mye du må betale i husleie per måned, omgjort til norske kroner • Husleien kan variere fra cirka kr. 2 000,- til kr. 6 000,- per måned

Neste

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
20 m2 *---istedenfor---* 10 m2	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kr. 2 000,- *---istedenfor---* kr. 6 000,-	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kort spasetur *---istedenfor---* 40 minutt med buss	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
dele bad med 0 studenter *---istedenfor---* dele bad med 3 studenter	○	○	○	○	○	○	○

Neste

Du vil nå bli presentert en del spørsmål. Disse spørsmålene kan se like ut, men vi anmoder om at du besvarer alle spørsmål så nøyaktig som mulig for at undersøkelsen skal gi et mest mulig nøyaktig bilde av dine preferanser.

Neste

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
20 m2 *---istedenfor---* 10 m2	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kr. 2 000,- *---istedenfor---* kr. 6 000,-	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kort spasetur *---istedenfor---* 40 minutt med buss	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
dele bad med 0 studenter *---istedenfor---* dele bad med 3 studenter	○	○	○	○	○	○	○

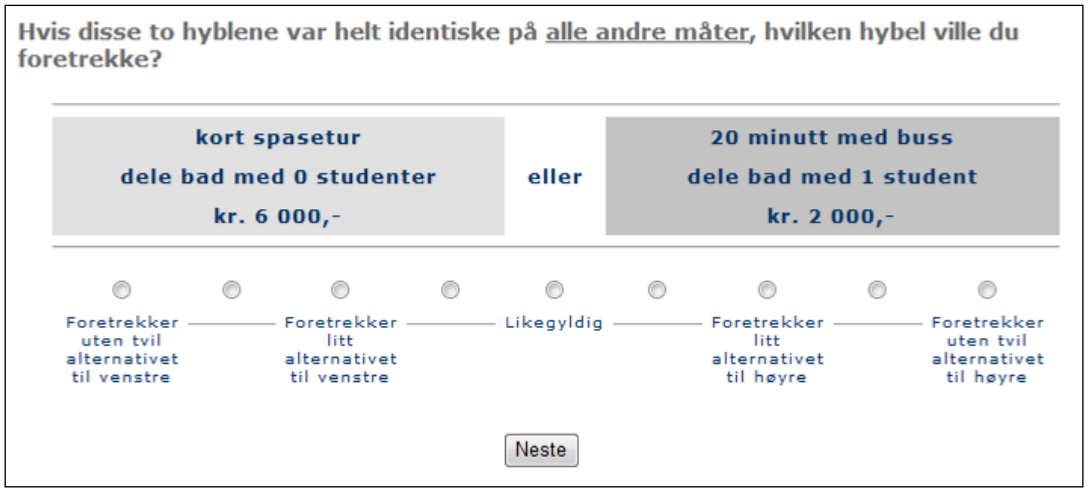
Neste

Hvis disse to hyblene var helt identiske på alle andre måter, hvilken hybel ville du foretrekke?

kr. 2 000,- dele bad med 3 studenter	**eller**	**kr. 4 000,- dele bad med 1 student**

○	○	○	○	○	○	○	○	○
Foretrekker uten tvil alternativet til venstre		Foretrekker litt alternativet til venstre		Likegyldig		Foretrekker litt alternativet til høyre		Foretrekker uten tvil alternativet til høyre

Neste


Hvis disse to hyblene var helt identiske på alle andre måter, hvilken hybel ville du foretrekke?
kort spasetur
dele bad med 0 studenter
kr. 6 000,-
eller
20 minutt med buss
dele bad med 1 student
kr. 2 000,-
Foretrekker uten tvil alternativet til venstre
Foretrekker litt alternativet til venstre
Likegyldig
Foretrekker litt alternativet til høyre
Foretrekker uten tvil alternativet til høyre
Neste


Vennligst skriv et tall mellom 0 og 100 hvor 0 betyr "Ville helt sikkert IKKE leie" denne hybelen og 100 betyr "Ville helt SIKKERT leie" denne hybelen
Hvor sannsynlig er det at du ville leie denne hybelen?
dele bad med 3 studenter
kr. 6 000,-
10 m2
kort spasetur
Neste


Vennligst indiker...
Minste akseptable romstørrelse?
10m2
12m2
14m2
16m2
20m2+
Lengste akseptable avstand fra universitetsområdet?
kort spasetur
15 min. buss
20 min. buss
25 min. buss
30+ min. buss
Max antall studenter du kan tenke deg å dele bad med?
0
1
2
3
4+
Høyeste husleie du er villig til å betale?
kr. 2 000
kr. 3 000
kr. 4 000
kr. 5 000
kr. 6 000+
Neste

Takk for at du var med så langt!

Du er nå ferdig med den første delen av undersøkelsen. Du vil få en epost med informasjon om det neste spørreskjemaet om cirka en uke. Rett etter at du har fylt ut det neste spørreskjemaet, får du vite om du har vunnet en iPod Shuffle.

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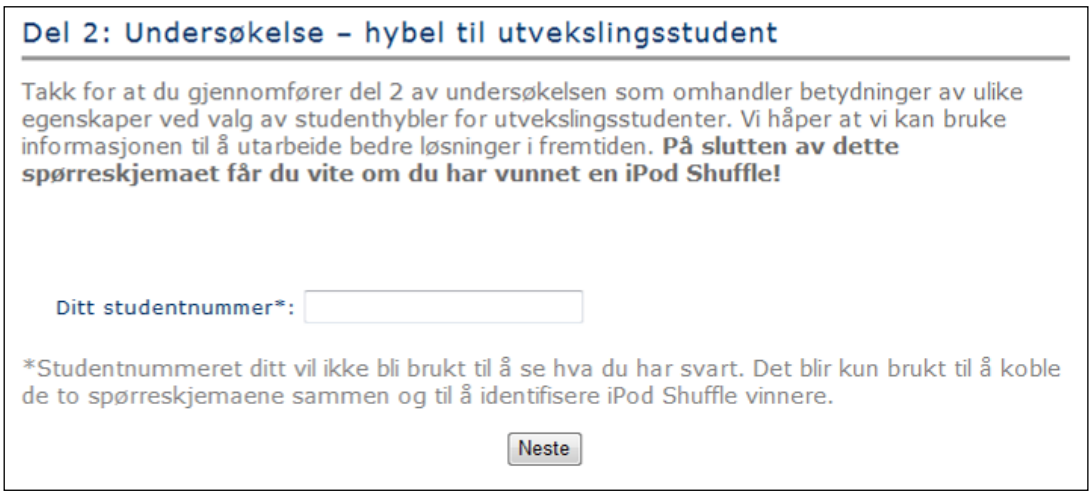
10.7.2. Experiment 2: example survey pages – time 2



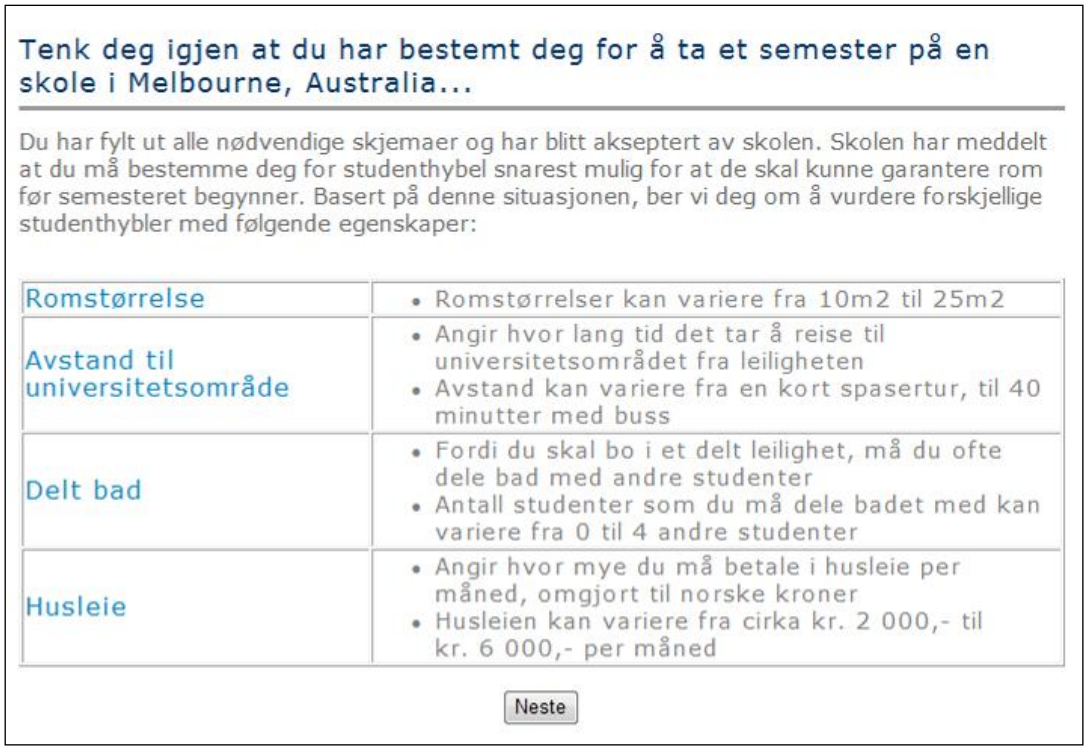
Del 2: Undersøkelse – hybel til utvekslingsstudent

Takk for at du gjennomfører del 2 av undersøkelsen som omhandler betydninger av ulike egenskaper ved valg av studenthybler for utvekslingsstudenter. Vi håper at vi kan bruke informasjonen til å utarbeide bedre løsninger i fremtiden. **På slutten av dette spørreskjemaet får du vite om du har vunnet en iPod Shuffle!**

Ditt studentnummer*:

*Studentnummeret ditt vil ikke bli brukt til å se hva du har svart. Det blir kun brukt til å koble de to spørreskjemaene sammen og til å identifisere iPod Shuffle vinnere.

Neste

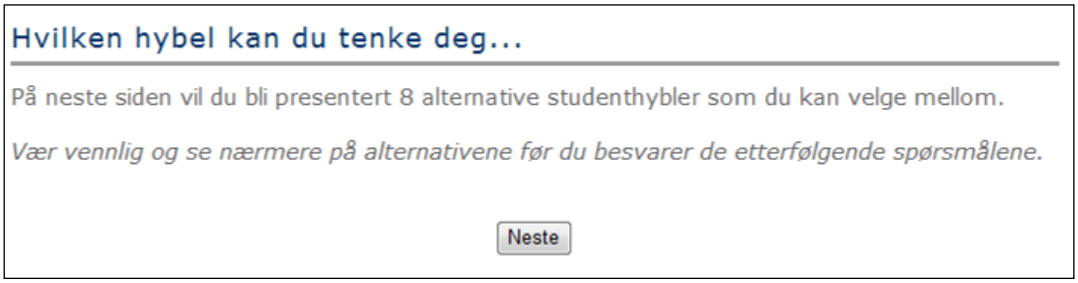


Tenk deg igjen at du har bestemt deg for å ta et semester på en skole i Melbourne, Australia...

Du har fylt ut alle nødvendige skjemaer og har blitt akseptert av skolen. Skolen har meddelt at du må bestemme deg for studenthybel snarest mulig for at de skal kunne garantere rom før semesteret begynner. Basert på denne situasjonen, ber vi deg om å vurdere forskjellige studenthybler med følgende egenskaper:

Romstørrelse	• Romstørrelser kan variere fra 10m2 til 25m2
Avstand til universitetsområde	• Angir hvor lang tid det tar å reise til universitetsområdet fra leiligheten • Avstand kan variere fra en kort spasertur, til 40 minutter med buss
Delt bad	• Fordi du skal bo i et delt leilighet, må du ofte dele bad med andre studenter • Antall studenter som du må dele badet med kan variere fra 0 til 4 andre studenter
Husleie	• Angir hvor mye du må betale i husleie per måned, omgjort til norske kroner • Husleien kan variere fra cirka kr. 2 000,- til kr. 6 000,- per måned

Neste



Hvilken hybel kan du tenke deg...

På neste siden vil du bli presentert 8 alternative studenthybler som du kan velge mellom.

Vær vennlig og se nærmere på alternativene før du besvarer de etterfølgende spørsmålene.

Neste

Fullerton Tower (FT)

Romstørrelse:	11 m2
Dele bad med:	3 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 4 200

Reading House (RH)

Romstørrelse:	10 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	15 min. buss
Husleie (per måned):	kr. 4 150

Cowley Place (CP)

Romstørrelse:	20 m2
Dele bad med:	3 studenter
Avstand fra universitetet:	15 min. buss
Husleie (per måned):	kr. 3 400

Headington House (HH)

Romstørrelse:	19 m2
Dele bad med:	1 student
Avstand fra universitetet:	25 min. buss
Husleie (per måned):	kr. 3 850

Sturbridge House (SH)

Romstørrelse:	16 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	25 min. buss
Husleie (per måned):	kr. 4 500

Devon Place (DP)

Romstørrelse:	13 m2
Dele bad med:	2 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 5 150

Hawthorn Tower (HT)

Romstørrelse:	13 m2
Dele bad med:	2 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 4 100

Beacon Place (BP)

Romstørrelse:	17 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	35 min. buss
Husleie (per måned):	kr. 3 950

Vennligst svar på de følgende spørsmålene.

Vi vil spørre deg om årsakene for ditt valg på slutten av dette spørreskjemaet.

	BP Beacon Place	CP Cowley Place	DP Devon Place	FT Fullerton Tower	HH Headington House	HT Hawthorn Tower	RH Reading House	SH Sturbridge House
Hvilke hybler kan du tenke deg å leie? *(kryss av alle aktuelle hybelalternativer)*	☐	☐	☐	☐	☐	☐	☐	☐
Hvilke hybler er akseptable for deg? *(kryss av alle aktuelle hybelalternativer)*	☐	☐	☐	☐	☐	☐	☐	☐
Hvis du skulle leie en av hyblene, hvilken ville du ha valgt? *(kryss av bare ett alternativ)*	○	○	○	○	○	○	○	○

Neste

Sturbridge House (SH)	
Romstørrelse:	16 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	25 min. buss
Husleie (per måned):	kr. 4 500

Devon Place (DP)	
Romstørrelse:	13 m2
Dele bad med:	2 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 5 150

Hawthorn Tower (HT)	
Romstørrelse:	13 m2
Dele bad med:	2 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 4 100

Beacon Place (BP)	
Romstørrelse:	17 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	35 min. buss
Husleie (per måned):	kr. 3 950

Vennligst svar på de følgende spørsmålene.
Alternativene er det samme som på forrige side.

	BP Beacon Place	CP Cowley Place	DP Devon Place	FT Fullerton Tower	HH Headington House	HT Hawthorn Tower	RH Reading House	SH Sturbridge House
Vurder hvor attraktiv du finner de ulike hyblene fra 1 til 7, *der **1** = **Ikke Attraktiv** og **7** = **Svært Attraktiv***								
Hvilket alternativ tror du er mest populært blant andre studenter?								
Hvor populær tror du andre studenter finner de ulike hyblene? Skala fra 1 til 7, *der **1** = **Ikke Populær** og **7** = **Svært Populær***								

	Ikke Vanskelig						Veldig Vanskelig
	1	2	3	4	5	6	7
Hvor vanskelig var det å velge blant de ulike hybelalternativer? Skala fra 1 til 7, *der **1** = **Ikke Vanskelig** og **7** = **Veldig Vanskelig***							

Neste

Hva foretrekker du?

Du vil nå bli presentert en del spørsmål. Disse spørsmålene kan se like ut, men vi anmoder om at du besvarer alle spørsmål så nøyaktig som mulig for at undersøkelsen skal gi et mest mulig nøyaktig bilde av dine preferanser.

Neste

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
20 m2 *---istedenfor---* 10 m2	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kr. 2 000,- *---istedenfor---* kr. 6 000,-	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kort spasetur *---istedenfor---* 40 minutt med buss	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
dele bad med 0 studenter *---istedenfor---* dele bad med 3 studenter	○	○	○	○	○	○	○

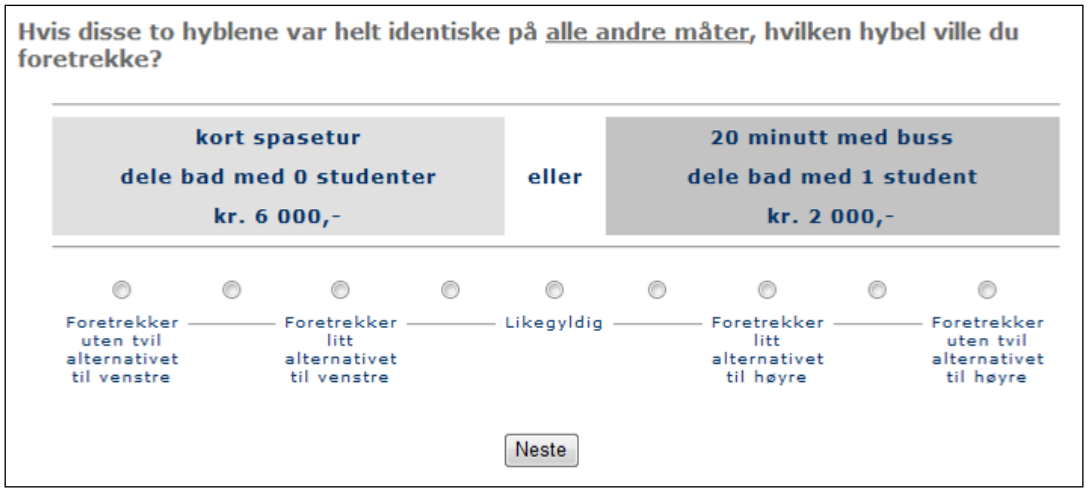
Neste

Hvis disse to hyblene var helt identiske på alle andre måter, hvilken hybel ville du foretrekke?

kr. 2 000,- dele bad med 3 studenter	**eller**	**kr. 4 000,- dele bad med 1 student**

○	○	○	○	○	○	○	○	○
Foretrekker uten tvil alternativet til venstre		Foretrekker litt alternativet til venstre		Likegyldig		Foretrekker litt alternativet til høyre		Foretrekker uten tvil alternativet til høyre

Neste


Hvis disse to hyblene var helt identiske på alle andre måter, hvilken hybel ville du foretrekke?
kort spasetur
dele bad med 0 studenter
kr. 6 000,-
eller
20 minutt med buss
dele bad med 1 student
kr. 2 000,-
Foretrekker uten tvil alternativet til venstre
Foretrekker litt alternativet til venstre
Likegyldig
Foretrekker litt alternativet til høyre
Foretrekker uten tvil alternativet til høyre
Neste


Vennligst skriv et tall mellom 0 og 100 hvor 0 betyr "Ville helt sikkert IKKE leie" denne hybelen og 100 betyr "Ville helt SIKKERT leie" denne hybelen
Hvor sannsynlig er det at du ville leie denne hybelen?
dele bad med 3 studenter
kr. 6 000,-
10 m2
kort spasetur
Neste


Vennligst indiker...
Minste akseptable romstørrelse?
10m2
12m2
14m2
16m2
20m2+
Lengste akseptable avstand fra universitetsområdet?
kort spasetur
15 min. buss
20 min. buss
25 min. buss
30+ min. buss
Max antall studenter du kan tenke deg å dele bad med?
0
1
2
3
4+
Høyeste husleie du er villig til å betale?
kr. 2 000
kr. 3 000
kr. 4 000
kr. 5 000
kr. 6 000+
Neste

Du er nesten ferdig med undersøkkelsen!

Vennligst skriv ett eller flere grunner om hvorfor du foretrekker den hybelen du valgte:

Vennligst svar på de følgende spørsmålene ved å velge det tallet som best beskriver din oppfatning:

	Helt Uenig			Nøytral			Helt Enig
	1	2	3	4	5	6	7
Selv etter at jeg hadde funnet et godt hybelalternativ var jeg redd for at jeg hadde oversett et enda bedre alternativ.	○	○	○	○	○	○	○
Når jeg valgte hybel, var jeg nysgjerrig på hva det ville innebære å velge en annen hybel.	○	○	○	○	○	○	○
Jeg er sikker på at jeg valgte den beste hybelen blant de ulike alternativene.	○	○	○	○	○	○	○
Når jeg valgte hybel, lurte jeg på hva som ville ha skjedd hvis jeg valgte en annen hybel.	○	○	○	○	○	○	○
Når jeg valgte hybel, lurte jeg på om jeg ville likt en annen hybel bedre.	○	○	○	○	○	○	○

Nå skal du finne ut om du har vunnet en iPod Shuffle...

Neste

Beklager, du vant ikke.

Men husk at din innsats har vært et viktig bidrag til undersøkelsen og vi setter stor pris på at du var med!

Neste

Gratulerer!

Siden du har kommet til denne siden, har du vunnet en iPod Shuffle! Under kan du velge farge på din iPod Shuffle og du vil få mer informasjon i en e-post utsendelse i løpet av noen få dager.

Hvilken farge ønske du?

Sølv 

Grønn 

Rosa 

Blå 

Rød 

Din innsats har vært et viktig bidrag til undersøkelsen og vi setter stor pris på at du var med!

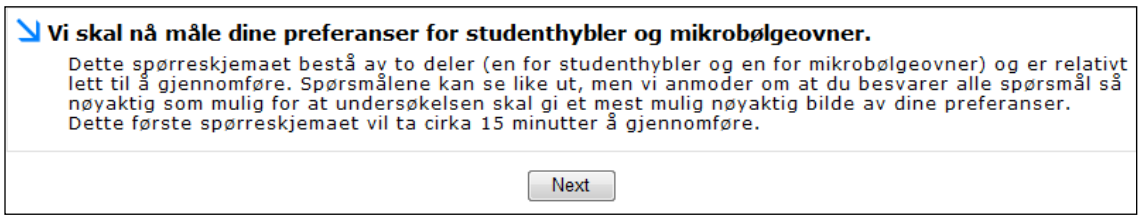
Neste

Du er nå ferdig med undersøkelsen

Powered by Sawtooth Software, Inc.

10.8. Experiment 3 surveys

10.8.1. Experiment 3 example survey pages – time 1



Tenk deg at du har bestemt deg for å ta et semester på en skole i Melbourne, Australia. Du har fylt ut alle nødvendige skjemaer og har blitt akseptert av skolen. Skolen har meddelt at du må bestemme deg for studenthybel snarest mulig for at de skal kunne garantere rom før semesteret begynner. Basert på denne situasjonen, ber vi deg om å vurdere forskjellige studenthybler med følgende egenskaper:

Romstørrelse	• Romstørrelser kan variere fra 10m2 til 25m2
Avstand til universitetsområde	• Angir hvor lang tid det tar å reise til universitetsområdet fra leiligheten • Avstand kan variere fra en kort spasertur, til 40 minutter med buss
Delt bad	• Fordi du skal bo i et delt leilighet, må du ofte dele bad med andre studenter • Antall studenter som du må dele badet med kan variere fra 0 til 4 andre studenter
Husleie	• Angir hvor mye du må betale i husleie per måned, omgjort til norske kroner • Husleien kan variere fra cirka kr. 2 000,- til kr. 6 000,- per måned

Neste

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
20 m2 *---istedenfor---* 10 m2	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kr. 2 000,- *---istedenfor---* kr. 6 000,-	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
kort spasetur *---istedenfor---* 40 minutt med buss	○	○	○	○	○	○	○

Hvis to hybler var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?

	Ikke Viktig		Litt Viktig		Veldig Viktig		Ekstremt Viktig
dele bad med 0 studenter *---istedenfor---* dele bad med 3 studenter	○	○	○	○	○	○	○

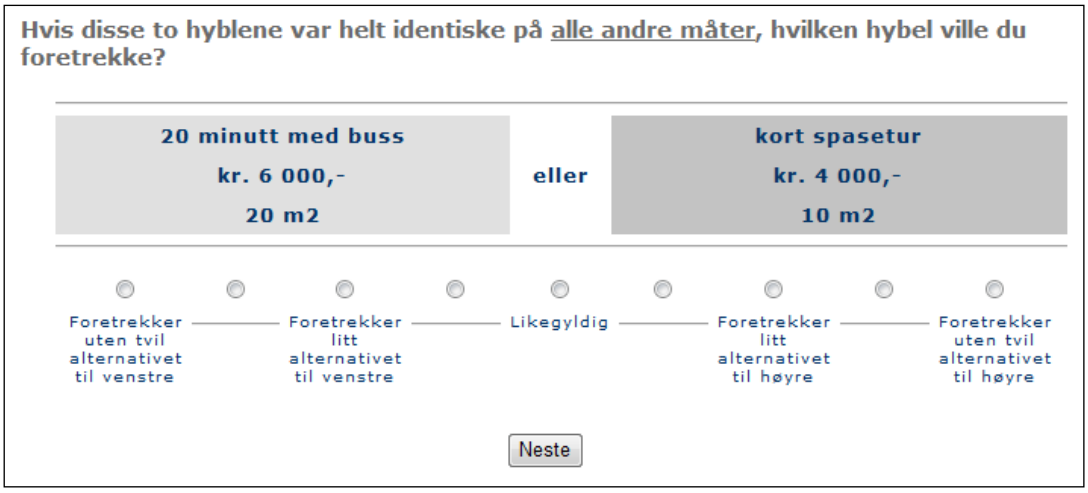
Neste

Hvis disse to hyblene var helt identiske på alle andre måter, hvilken hybel ville du foretrekke?

kr. 2 000,- dele bad med 3 studenter	**eller**	**kr. 4 000,- dele bad med 1 student**

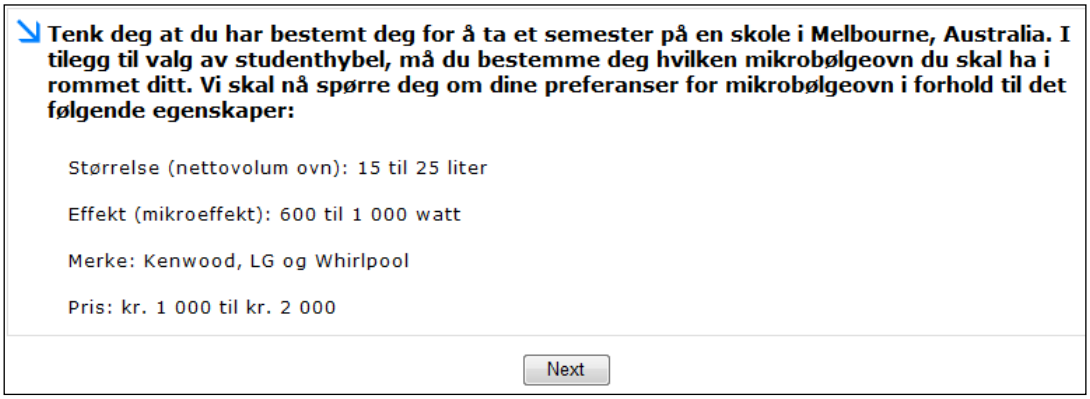
○	○	○	○	○	○	○	○	○
Foretrekker uten tvil alternativet til venstre		Foretrekker litt alternativet til venstre		Likegyldig		Foretrekker litt alternativet til høyre		Foretrekker uten tvil alternativet til høyre

Neste


Hvis disse to hyblene var helt identiske på alle andre måter, hvilken hybel ville du foretrekke?
20 minutt med buss
kr. 6 000,-
20 m2
eller
kort spasetur
kr. 4 000,-
10 m2
Foretrekker uten tvil alternativet til venstre
Foretrekker litt alternativet til venstre
Likegyldig
Foretrekker litt alternativet til høyre
Foretrekker uten tvil alternativet til høyre
Neste

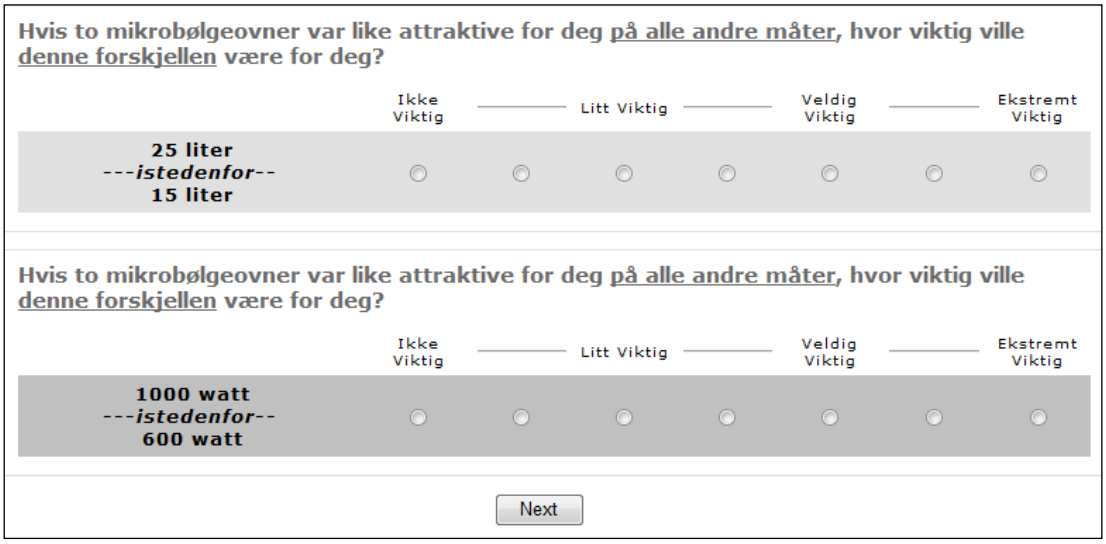

For hver enkelt hybel, vennligst skriv et tall mellom 0 og 100 hvor 0 betyr "Ville helt sikkert IKKE leie" denne hybelen og 100 betyr "Ville helt SIKKERT leie" denne hybelen
Hvor sannsynlig er det at du ville leie denne hybelen?
dele bad med 3 studenter
kr. 6 000,-
20 m2
40 minutt med buss
dele bad med 0 studenter
kr. 2 000,-
10 m2
kort spasetur
dele bad med 3 studenter
kr. 6 000,-
10 m2
kort spasetur
Neste


Vennligst indiker...
Minste akseptable romstørrelse?
10m2
12m2
14m2
16m2
20m2+
Lengste akseptable avstand fra universitetsområdet?
kort spasetur
15 min. buss
20 min. buss
25 min. buss
30+ min. buss
Max antall studenter du kan tenke deg å dele bad med?
0
1
2
3
4+
Høyeste husleie du er villig til å betale?
kr. 3 000
kr. 3 500
kr. 4 000
kr. 4 500
kr. 5 000+
Neste


Tenk deg at du har bestemt deg for å ta et semester på en skole i Melbourne, Australia. I tilegg til valg av studenthybel, må du bestemme deg hvilken mikrobølgeovn du skal ha i rommet ditt. Vi skal nå spørre deg om dine preferanser for mikrobølgeovn i forhold til det følgende egenskaper:
Størrelse (nettovolum ovn): 15 til 25 liter
Effekt (mikroeffekt): 600 til 1 000 watt
Merke: Kenwood, LG og Whirlpool
Pris: kr. 1 000 til kr. 2 000
Next

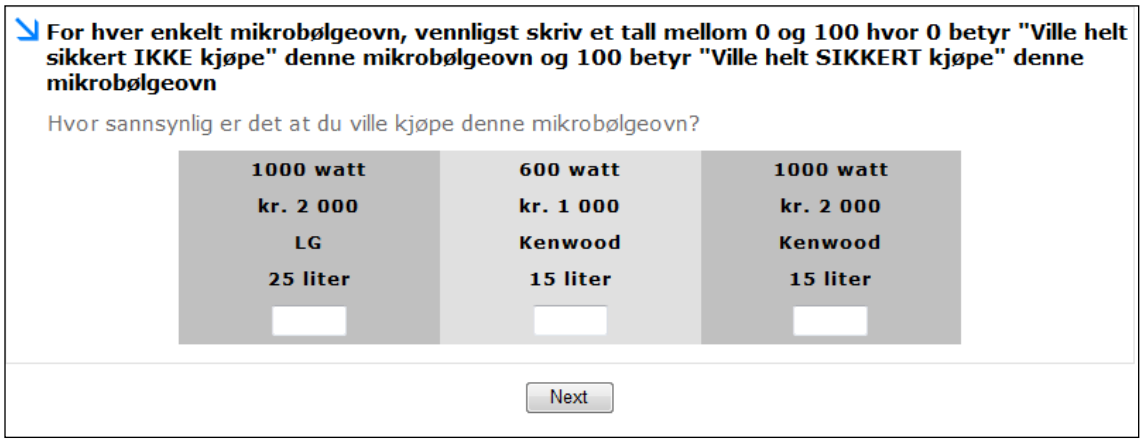

Vennligst vurder merkene i forhold til hvor ønskverdige de er:
Ikke Ønskverdig
Litt Ønskverdig
Veldig Ønskverdig
Ekstremt Ønskverdig
LG
Whirlpool
Kenwood
Next


Hvis to mikrobølgeovner var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?
Ikke Viktig
Litt Viktig
Veldig Viktig
Ekstremt Viktig
Kenwood
---istedenfor--
LG
Hvis to mikrobølgeovner var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?
Ikke Viktig
Litt Viktig
Veldig Viktig
Ekstremt Viktig
kr. 1 000
---istedenfor--
kr. 2 000
Next

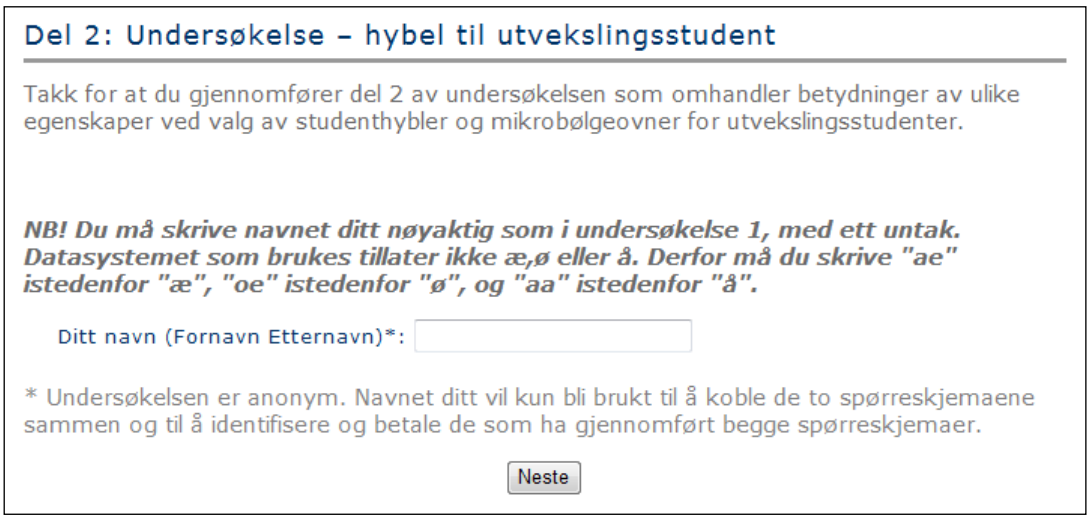

Hvis to mikrobølgeovner var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?
Ikke Viktig
Litt Viktig
Veldig Viktig
Ekstremt Viktig
25 liter
---istedenfor--
15 liter
Hvis to mikrobølgeovner var like attraktive for deg på alle andre måter, hvor viktig ville denne forskjellen være for deg?
Ikke Viktig
Litt Viktig
Veldig Viktig
Ekstremt Viktig
1000 watt
---istedenfor--
600 watt
Next


Hvis disse to mikrobølgeovnene var helt identiske på alle andre måter, hvilken mikrobølgeovn ville du foretrekke?
kr. 1 000
800 watt
eller
kr. 1 500
1000 watt
Foretrekker uten tvil alternativet til venstre
Foretrekker litt alternativet til venstre
Likegyldig
Foretrekker litt alternativet til høyre
Foretrekker uten tvil alternativet til høyre
Next


Hvis disse to mikrobølgeovnene var helt identiske på alle andre måter, hvilken mikrobølgeovn ville du foretrekke?
20 liter
kr. 2 000
LG
eller
15 liter
kr. 1 500
Kenwood
Foretrekker uten tvil alternativet til venstre
Foretrekker litt alternativet til venstre
Likegyldig
Foretrekker litt alternativet til høyre
Foretrekker uten tvil alternativet til høyre
Next


For hver enkelt mikrobølgeovn, vennligst skriv et tall mellom 0 og 100 hvor 0 betyr "Ville helt sikkert IKKE kjøpe" denne mikrobølgeovn og 100 betyr "Ville helt SIKKERT kjøpe" denne mikrobølgeovn
Hvor sannsynlig er det at du ville kjøpe denne mikrobølgeovn?
1000 watt
kr. 2 000
LG
25 liter
600 watt
kr. 1 000
Kenwood
15 liter
1000 watt
kr. 2 000
Kenwood
15 liter
Next

10.8.2. Experiment 3 example survey pages – time 2



Del 2: Undersøkelse – hybel til utvekslingsstudent

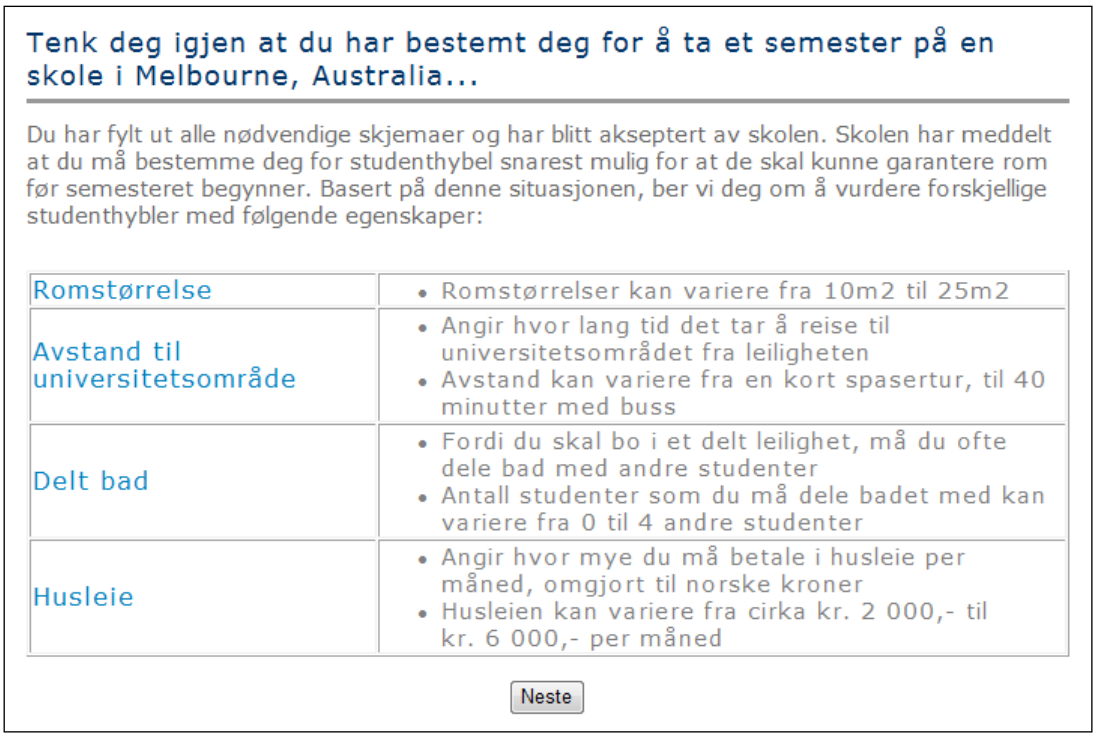
Takk for at du gjennomfører del 2 av undersøkelsen som omhandler betydninger av ulike egenskaper ved valg av studenthybler og mikrobølgeovner for utvekslingsstudenter.

NB! Du må skrive navnet ditt nøyaktig som i undersøkelse 1, med ett untak. Datasystemet som brukes tillater ikke æ,ø eller å. Derfor må du skrive "ae" istedenfor "æ", "oe" istedenfor "ø", og "aa" istedenfor "å".

Ditt navn (Fornavn Etternavn)*:

* Undersøkelsen er anonym. Navnet ditt vil kun bli brukt til å koble de to spørreskjemaene sammen og til å identifisere og betale de som ha gjennomført begge spørreskjemaer.

Neste

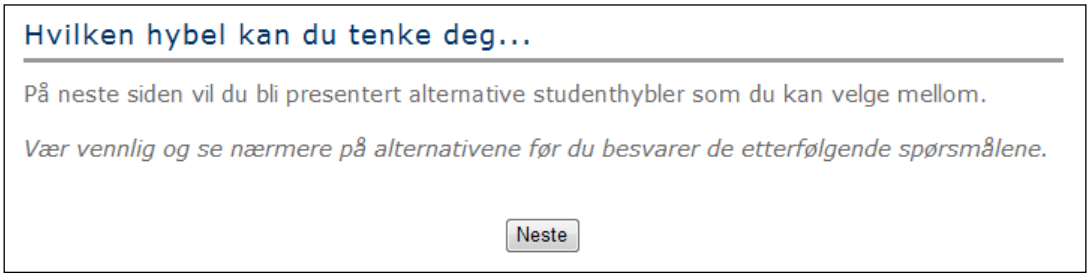


Tenk deg igjen at du har bestemt deg for å ta et semester på en skole i Melbourne, Australia...

Du har fylt ut alle nødvendige skjemaer og har blitt akseptert av skolen. Skolen har meddelt at du må bestemme deg for studenthybel snarest mulig for at de skal kunne garantere rom før semesteret begynner. Basert på denne situasjonen, ber vi deg om å vurdere forskjellige studenthybler med følgende egenskaper:

Romstørrelse	• Romstørrelser kan variere fra 10m2 til 25m2
Avstand til universitetsområde	• Angir hvor lang tid det tar å reise til universitetsområdet fra leiligheten • Avstand kan variere fra en kort spasertur, til 40 minutter med buss
Delt bad	• Fordi du skal bo i et delt leilighet, må du ofte dele bad med andre studenter • Antall studenter som du må dele badet med kan variere fra 0 til 4 andre studenter
Husleie	• Angir hvor mye du må betale i husleie per måned, omgjort til norske kroner • Husleien kan variere fra cirka kr. 2 000,- til kr. 6 000,- per måned

Neste



Hvilken hybel kan du tenke deg...

På neste siden vil du bli presentert alternative studenthybler som du kan velge mellom.

Vær vennlig og se nærmere på alternativene før du besvarer de etterfølgende spørsmålene.

Neste

Beacon Place (BP)

Romstørrelse:	16 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	35 min. buss
Husleie (per måned):	kr. 3 900

Cowley Place (CP)

Romstørrelse:	19 m2
Dele bad med:	3 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 4 250

Hawthorn Tower (HT)

Romstørrelse:	12 m2
Dele bad med:	1 student
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 4 200

Reading House (RH)

Romstørrelse:	11 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	15 min. buss
Husleie (per måned):	kr. 4 050

Vennligst svar på de følgende spørsmålene.

Vi vil spørre deg om årsakene for ditt valg på slutten av dette spørreskjemaet.

	BP Beacon Place	CP Cowley Place	HT Hawthorn Tower	RH Reading House
Hvilke hybler kan du tenke deg å leie? *(kryss av alle aktuelle hybelalternativer)*	☐	☐	☐	☐
Hvilke hybler er akseptable for deg? *(kryss av alle aktuelle hybelalternativer)*	☐	☐	☐	☐
Hvis du skulle leie en av hyblene, hvilken ville du ha valgt? *(kryss av bare ett alternativ)*	○	○	○	○

	Ikke Vanskelig						Veldig Vanskelig
	1	2	3	4	5	6	7
Hvor vanskelig var det å velge blant de ulike hybelalternativer? Skala fra 1 til 7, *der **1** = **Ikke Vanskelig** og **7** = **Veldig Vanskelig***	○	○	○	○	○	○	○

Neste

Beacon Place (BP)

Romstørrelse:	16 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	35 min. buss
Husleie (per måned):	kr. 3 900

Cowley Place (CP)

Romstørrelse:	19 m2
Dele bad med:	3 studenter
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 4 250

Hawthorn Tower (HT)

Romstørrelse:	12 m2
Dele bad med:	1 student
Avstand fra universitetet:	kort spasetur
Husleie (per måned):	kr. 4 200

Reading House (RH)

Romstørrelse:	11 m2
Dele bad med:	0 studenter
Avstand fra universitetet:	15 min. buss
Husleie (per måned):	kr. 4 050

Arlington Tower (AT)

Romstørrelse:	17 m2
Dele bad med:	2 studenter
Avstand fra universitetet:	15 min. buss
Husleie (per måned):	kr. 3 450

Waverley Place (WP)

Romstørrelse:	13 m2
Dele bad med:	3 studenter
Avstand fra universitetet:	35 min. buss
Husleie (per måned):	kr. 4 450

Sturbridge House (SH)

Romstørrelse:	19 m2
Dele bad med:	1 student
Avstand fra universitetet:	20 min. buss
Husleie (per måned):	kr. 4 300

Headington House (HH)

Romstørrelse:	20 m2
Dele bad med:	2 studenter
Avstand fra universitetet:	25 min. buss
Husleie (per måned):	kr. 3 150

Vennligst svar på de følgende spørsmålene.
Vi vil spørre deg om årsakene for ditt valg på slutten av dette spørreskjemaet.

	AT Arlington Tower	BP Beacon Place	CP Cowley Place	HH Headington House	HT Hawthorn Tower	RH Reading House	SH Sturbridge House	WP Waverley Place
Hvilke hybler kan du tenke deg å leie? *(kryss av alle aktuelle hybelalternativer)*	☐	☐	☐	☐	☐	☐	☐	☐
Hvilke hybler er akseptable for deg? *(kryss av alle aktuelle hybelalternativer)*	☐	☐	☐	☐	☐	☐	☐	☐
Hvis du skulle leie en av hyblene, hvilken ville du ha valgt? *(kryss av bare ett alternativ)*	○	○	○	○	○	○	○	○

	Ikke Vanskelig						Veldig Vanskelig
	1	2	3	4	5	6	7
Hvor vanskelig var det å velge blant de ulike hybelalternativer? Skala fra 1 til 7, *der **1** = **Ikke Vanskelig** og **7** = **Veldig Vanskelig***	○	○	○	○	○	○	○

Neste

Mikrobølgeovner

Tenk deg at du har bestemt deg for å ta et semester på en skole i Melbourne, Australia. I tilegg til valg av studenthybel, må du bestemme deg hvilken mikrobølgeovn du skal ha i rommet ditt. Vi skal nå spørre deg om dine preferanser for mikrobølgeovn i forhold til det følgende egenskaper:

Størrelse (nettovolum ovn): 15 til 25 liter

Effekt (mikroeffekt): 600 til 1 000 watt

Merke: Kenwood, LG og Whirlpool

Pris: kr. 1 000 til kr. 2 000

Neste

Hvilken mikrobølgovn kan du tenke deg...

På neste siden vil du bli presentert alternative mikrobølgovner som du kan velge mellom.

Vær vennlig og se nærmere på alternativene før du besvarer de etterfølgende spørsmålene.

Neste

A	
Nettovolum ovn (liter):	24 liter
Mikroeffekt (watt):	600 watt
Merke:	Whirlpool
Pris (kr.):	kr. 1 300

B	
Nettovolum ovn (liter):	22 liter
Mikroeffekt (watt):	1 000 watt
Merke:	LG
Pris (kr.):	kr. 1 650

C	
Nettovolum ovn (liter):	21 liter
Mikroeffekt (watt):	1 000 watt
Merke:	Kenwood
Pris (kr.):	kr. 1 700

D	
Nettovolum ovn (liter):	18 liter
Mikroeffekt (watt):	800 watt
Merke:	Whirlpool
Pris (kr.):	kr. 1 350

E	
Nettovolum ovn (liter):	22 liter
Mikroeffekt (watt):	700 watt
Merke:	Whirlpool
Pris (kr.):	kr. 1 400

F	
Nettovolum ovn (liter):	23 liter
Mikroeffekt (watt):	650 watt
Merke:	Kenwood
Pris (kr.):	kr. 1 250

G	
Nettovolum ovn (liter):	19 liter
Mikroeffekt (watt):	750 watt
Merke:	LG
Pris (kr.):	kr. 1 150

H	
Nettovolum ovn (liter):	17 liter
Mikroeffekt (watt):	800 watt
Merke:	Kenwood
Pris (kr.):	kr. 1 850

Vennligst svar på de følgende spørsmålene.
Vi vil spørre deg om årsakene for ditt valg på slutten av dette spørreskjemaet.

	A	B	C	D	E	F	G	H
Hvilke mikrobølgovner kan du tenke deg å kjøpe? *(kryss av alle aktuelle mikrobølgovner)*	☐	☐	☐	☐	☐	☐	☐	☐
Hvilke mikrobølgovner er akseptable for deg? *(kryss av alle aktuelle mikrobølgovner)*	☐	☐	☐	☐	☐	☐	☐	☐
Hvis du skulle kjøpe en av mikrobølgovnene, hvilken ville du ha valgt? *(kryss av bare ett alternativ)*	○	○	○	○	○	○	○	○

	Ikke Vanskelig						Veldig Vanskelig
	1	2	3	4	5	6	7
Hvor vanskelig var det å velge blant de ulike mikrobølgovnalternativer? Skala fra 1 til 7, *der **1** = **Ikke Vanskelig** og **7** = **Veldig Vanskelig***	○	○	○	○	○	○	○

Neste

A	
Nettovolum ovn (liter):	24 liter
Mikroeffekt (watt):	600 watt
Merke:	Whirlpool
Pris (kr.):	kr. 1 300

B	
Nettovolum ovn (liter):	22 liter
Mikroeffekt (watt):	1 000 watt
Merke:	LG
Pris (kr.):	kr. 1 650

C	
Nettovolum ovn (liter):	21 liter
Mikroeffekt (watt):	1 000 watt
Merke:	Kenwood
Pris (kr.):	kr. 1 700

D	
Nettovolum ovn (liter):	18 liter
Mikroeffekt (watt):	800 watt
Merke:	Whirlpool
Pris (kr.):	kr. 1 350

Vennligst svar på de følgende spørsmålene.
Vi vil spørre deg om årsakene for ditt valg på slutten av dette spørreskjemaet.

	A	B	C	D
Hvilke mikrobølgovner kan du tenke deg å kjøpe? *(kryss av alle aktuelle mikrobølgovner)*	☐	☐	☐	☐
Hvilke mikrobølgovner er akseptable for deg? *(kryss av alle aktuelle mikrobølgovner)*	☐	☐	☐	☐
Hvis du skulle kjøpe en av mikrobølgovnene, hvilken ville du ha valgt? *(kryss av bare ett alternativ)*	○	○	○	○

	Ikke Vanskelig						Veldig Vanskelig
	1	2	3	4	5	6	7
Hvor vanskelig var det å velge blant de ulike mikrobølgovnalternativer? Skala fra 1 til 7, *der **1 = Ikke Vanskelig** og **7 = Veldig Vanskelig***	○	○	○	○	○	○	○

Neste

Vi vil vite noe om ditt personlige forhold til hybler. Kryss av et punkt på skalaen som du mener best beskriver dette.

*I sammenheng med utvekslingsmuligheter, for meg er **hybler**:*

Lite viktig						Viktig
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Uinteressant						Interessant
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Betyr ingenting for meg						Betyr mye for meg
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Angår ikke meg						Angår meg
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Vennligst indiker...

Minste akseptable romstørrelse?

○ 10m2 ○ 12m2 ○ 14m2 ○ 16m2 ○ 20m2+

Lengste akseptable avstand fra universitetsområdet?

○ kort spasetur ○ 15 min. buss ○ 20 min. buss ○ 25 min. buss ○ 30+ min. buss

Max antall studenter du kan tenke deg å dele bad med?

○ 0 ○ 1 ○ 2 ○ 3 ○ 4+

Høyeste husleie du er villig til å betale?

○ kr. 3 000 ○ kr. 3 500 ○ kr. 4 000 ○ kr. 4 500 ○ kr. 5 000+

Neste

Vi vil vite noe om ditt personlige forhold til mikrobølgovner. Kryss av et punkt på skalaen som du mener best beskriver dette.

*I sammenheng med utvekslingsmuligheter, for meg er **mikrobølgovner**:*

Lite viktig						Viktig
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Uinteressant						Interessant
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Betyr ingenting for meg						Betyr mye for meg
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Angår ikke meg						Angår meg
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Neste

Du er nesten ferdig med undersøkkelsen!

Vennligst skriv ett eller flere grunner om hvorfor du foretrekker den **hybelen** du valgte:

Vennligst skriv ett eller flere grunner om hvorfor du foretrekker den **mikrobølgovnen** du valgte:

Vennligst svar på de følgende spørsmålene ved å velge det tallet som best beskriver din oppfatning:

	Helt Uenig			Nøytral			Helt Enig
	1	2	3	4	5	6	7
Jeg er sikker på at jeg valgte den beste **mikrobølgovnen** blant de ulike alternativene.	○	○	○	○	○	○	○
Jeg er sikker på at jeg valgte den beste **hybelen** blant de ulike alternativene.	○	○	○	○	○	○	○

Neste

10.9. Non-parametric tests

Some of the data from the experiments in this thesis did not meet the requirements for parametric tests, specifically normality. However, significance of results was the same whether parametric or non-parametric tests were used. Therefore, parametric tests have been presented throughout this document for simplicity and results from selected non-parametric tests are shown in this appendix.

10.9.1. Selected experiment 1 tests

Median uniqueness differences between conditions

Alternative	Need for Justification		No Need for Justification		Need for Justification	
	1 MINPA alternative (set 1, n = 67)	*3 MINPA alternatives (set 3, n = 27)*	*1 MINPA alternative (set 7, n = 36)*	*3 MINPA alternatives (set 9, n = 39)*	*1 AINPA alternative (set 4, n = 40)*	*3 AINPA alternatives (set 6, n = 37)*
AT	4.0[a]	4.0[a]	4.0		4.0	4.0
BH	5.0		5.0	6.0	5.0	5.0
BP						4.0
CH	5.0	5.0	5.0	4.0		
CP	4.0[b]	5.0[b]	4.0	5.0	4.0	4.0
DP		3.0		4.0		
EP	4.0[c]	5.0[c]	3.5[d]	5.0[d]		
FT		4.0		5.0		
HH	4.0	4.0	4.0	4.0	4.0	5.0
HT	5.0[e]	4.0[e]	6.0[f]	3.0[f]	5.0	5.0
LH					4.0	
MP					4.0	
RH	4.0[g]	5.0[g]	4.0[h]	4.0[h]	5.0[i]	4.0[i]
SH						5.0
WP	3.0		4.0		3.0	3.0

NOTE.–"MINPA" = most-important non-price attribute and "AINPA" = another important non-price attribute. A non-parametric, Mann-Whitney test was used to determine significance. A higher median indicates higher perceived uniqueness for the alternative. Significance is compared by the number of targets manipulation within groups. All pairs with the same superscript letter are significantly different at the level indicated below.

[a] $p<.05$.
[b] $p<.01$.
[c] $p<.05$.
[d] $p<.01$.
[e] $p<.05$.
[f] $p<.01$.
[g] $p<.05$.
[h] $p<.01$.
[i] $p<.01$.
[j] $p<.01$.

Median favorability differences between conditions

Alternative	Need for Justification		No Need for Justification		Dominance	
	1 MINPA alternative (set 1, n = 67)	*3 MINPA alternatives (set 3, n = 27)*	*1 MINPA alternative (set 8, n = 36)*	*3 MINPA alternatives (set 10, n = 39)*	*1 AINPA alternative (set 5, n = 40)*	*3 AINPA alternatives (set 7, n = 37)*
AT	4.0	3.5	4.3		4.3	4.5
BH	2.5		3.5	2.5	2.5[a]	3.0[a]
BP						4.0
CH	4.5	5.0	4.0[b]	5.0[b]		
CP	4.0[c]	3.0[c]	4.0	4.0	3.5	3.5
DP		3.5		3.5		
EP	4.0	3.5	5.0	4.5		
FT		4.0		3.0		
HH	4.0[d]	3.3[d]	3.5[e]	4.5[e]	4.0	4.0
HT	4.5	4.5	4.0	4.0	4.0	4.3
LH					4.0	
MP					4.5	
RH	4.0	4.5	5.0	5.0	4.0	5.0
SH						4.0
WP	4.0		4.5		4.0[f]	4.5[f]

NOTE.–"MINPA" = most-important non-price attribute and "AINPA" = another important non-price attribute. A non-parametric, Mann-Whitney test was used to determine significance. A higher median indicates higher favorability for the alternative. Significance is compared by the number of targets manipulation within groups. All pairs with the same superscript letter are significantly different at the level indicated below.

[a] $p<.05$.

[b] $p<.05$.

[c] $p<.05$.

[d] $p<.05$.

[e] $p<.01$.

[f] $p<.05$.

10.9.2. Selected experiment 2 test

Survey completion time differences between sets

Experiment Group		$Mdn_{seconds}$	*U*	*r*
1 vs. 2	Unique	847.5 *(n = 36)*	487.50*	-.23
	AD	672.0 *(n = 37)*		
2 vs. 3	AD	672.0 *(n = 37)*	592.00*	.23
	Control	851.5 *(n = 44)*		
1 vs. 3	Unique	847.5 *(n = 36)*	760.50	-
	Control	851.0 *(n = 44)*		

NOTE.–A non-parametric, Mann-Whitney test was used to determine significance; where Mdn is the median, and U is the test statistic. “Unique” = uniqueness condition, “AD” = asymmetric dominance condition and “Baseline” = baseline condition.

*p<.05.

10.10. Experiment 4 observed vs. predicted choices

This section presents observed versus predicted choice for each product category used in Experiment 4.

Observed verses proportional choice: high involvement (housing)

Choice set		Alternative							
		TARGET	*DECOY/ OTHER*	*DECOY/ OTHER*	*COMPETITORS*			*OTHERS*	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Individualized alternatives									
1	Complex UQ (*n = 22*)	.27	.00 (*Other*)	.00 (*Other*)	.23	.00**	.14	.14	.23
2	Complex AD 1 (*n = 27*)	.37***	.00 (*Decoy*)	.00 (*Other*)	.07	.04**	.07	.11	.33**
3	Complex AD 2 (*n = 22*)	.41***	.00 (*Decoy*)	.00 (*Decoy*)	.05*	.05*	.18	.05*	.27
4	Simple UQ (*n = 30*)	.23	.07 (*Other*)	-	.23	-	.47*	-	-
5	Simple AD (*n = 29*)	.45	.03 (*Decoy*)	-	.14	-	.38	-	-
Aggregate alternatives									
6	Complex UQ (*n = 25*)	.32**	.00 (*Other*)	.00 (*Other*)	.00**	.04	.20	.00**	.44***
7	Complex AD 2 (*n = 26*)	.27	.04 (*Decoy*)	.04 (*Decoy*)	.15	.11	.15	.04	.19

NOTE.–Significance is calculated for observed choice of alternatives vs. equal share (proportional) model predictions. Because there were 6 viable alternatives in complex task sets, 16.67% share was predicted for each viable alternative. There were 3 viable alternatives in each simple task set, so 33.3% share was predicted for each viable alternative. Decoy alternatives are predicted to achieve 0% choice share. Share percentages may not total to 1 in some instance due to rounding. "UQ" = unique, "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions. Whether C or F was a Decoy or inferior Other alternative in a set is indicated where choice share is presented. Because C and F were inferior in all cases, expected share for them was 0%. Alternative "D" = $\text{COMPETITOR}_{\text{D(Best)}}$, "G" = $\text{COMPETITOR}_{\text{G(Middle)}}$ and "A" = $\text{COMPETITOR}_{\text{A(Worst)}}$.

*p<.1.

**p<.05.

***p<.01 (all binomial tests, one-tailed).

Observed verses proportional choice: high involvement (heat pumps)

Choice set		Alternative							
		TARGET	*DECOY/ OTHER*	*DECOY/ OTHER*	*COMPETITORS*			*OTHERS*	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Individualized alternatives									
1	Complex UQ (*n = 37*)	.19	.03 (*Other*)	.00 (*Other*)	.32**	.11	.24	.05**	.05**
2	Complex AD 1 (*n = 31*)	.23	.00 (*Decoy*)	.00 (*Other*)	.26	.26	.26	.00***	.00***
3	Complex AD 2 (*n = 35*)	.23	.03 (*Decoy*)	.00 (*Decoy*)	.34***	.09	.17	.11	.03**
4	Simple UQ (*n = 34*)	.38	.06 (*Other*)	-	.32	-	.24	-	-
5	Simple AD (*n = 33*)	.27	.03 (*Decoy*)	-	.33	-	.36	-	-

NOTE.–Significance is calculated for observed choice of alternatives vs. equal share (proportional) model predictions. Because there were 6 viable alternatives in complex task sets, 16.67% share was predicted for each viable alternative. There were 3 viable alternatives in each simple task set, so 33.3% share was predicted for each viable alternative. Decoy alternatives are predicted to achieve 0% choice share. Share percentages may not total to 1 in some instance due to rounding. "UQ" = unique, "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions. Whether C or F was a Decoy or inferior Other alternative in a set is indicated where choice share is presented. Because CP and WP were inferior in all cases, expected share for them was 0%. Alternative "D"= $\text{COMPETITOR}_{\text{D(Best)}}$, "G" = $\text{COMPETITOR}_{\text{G(Middle)}}$, and "A" = $\text{COMPETITOR}_{\text{A(Worst)}}$.

*p<.1.

**p<.05.

***p<.01 (all binomial tests, one-tailed).

Observed verses proportional choice: low involvement (microwaves)

Choice set		Alternative							
		TARGET	*DECOY/ OTHER*	*DECOY/ OTHER*	*COMPETITORS*			*OTHERS*	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Individualized alternatives									
1	Complex UQ (*n = 27*)	.11	.00 (*Other*)	.00 (*Other*)	.15	.11	.22	.00***	.41***
2	Complex AD 1 (*n = 28*)	.11	.04 (*Decoy*)	.00 (*Other*)	.11	.07	.21	.00***	.46***
3	Complex AD 2 (*n = 21*)	.19	.00 (*Decoy*)	.00 (*Decoy*)	.19	.05	.10	.10	.38*
4	Simple UQ (*n = 22*)	.27	.00 (*Other*)	-	.18	-	.55**	-	-
5	Simple AD (*n = 30*)	.33	.00 (*Decoy*)	-	.37	-	.30	-	-
Aggregate alternatives									
6	Complex UQ (*n = 23*)	.22	.00 (*Other*)	.04 (*Other*)	.09	.04	.04	.13	.44***
7	Complex AD 2 (*n = 30*)	.20	.07 (*Decoy*)	.07 (*Decoy*)	.10	.07	.03**	.10	.37***

NOTE.–Significance is calculated for observed choice of alternatives vs. equal share (proportional) model predictions. Because there were 6 viable alternatives in complex task sets, 16.67% share was predicted for each viable alternative. There were 3 viable alternatives in each simple task set, so 33.3% share was predicted for each viable alternative. Decoy alternatives are predicted to achieve 0% choice share. Share percentages may not total to 1 in some instance due to rounding. "UQ" = unique, "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions (i.e. these two alternatives were always non-viable for choice). Whether C or F was a Decoy or inferior Other alternative in a set is indicated where choice share is presented. Because CP and WP were inferior in all cases, expected share for them was 0%. Alternative "D"= $\text{COMPETITOR}_{\text{D(Best)}}$, "G" = $\text{COMPETITOR}_{\text{G(Middle)}}$, and "A" = $\text{COMPETITOR}_{\text{A(Worst)}}$.

*p<.1.

**p<.05.

***p<.01 (all binomial tests, one-tailed).

Observed verses proportional choice: low involvement (blenders)

Choice set		Alternative							
		TARGET	*DECOY/ OTHER*	*DECOY/ OTHER*	*COMPETITORS*			*OTHERS*	
		B	**C**	**F**	**D**	**G**	**A**	**E**	**H**
Individualized alternatives									
1	Complex UQ (*n = 27*)	.11	.07 (*Other*)	.04 (*Other*)	.30	.04**	.11	.15	.19
2	Complex AD 1 (*n = 35*)	.17	.09 (*Decoy*)	.03 (*Other*)	.14	.03**	.09	.20	.26
3	Complex AD 2 (*n = 33*)	.09	.00 (*Decoy*)	.06 (*Decoy*)	.18	.09	.09	.24	.24
4	Simple UQ (*n = 34*)	.29	.00 (*Other*)	-	.53*	-	.18**	-	-
5	Simple AD (*n = 41*)	.42	.05 (*Decoy*)	-	.37	-	.17**	-	-

NOTE.–Significance is calculated for observed choice of alternatives vs. equal share (proportional) model predictions. Because there were 6 viable alternatives in complex task sets, 16.67% share was predicted for each viable alternative. There were 3 viable alternatives in each simple task set, so 33.3% share was predicted for each viable alternative. Decoy alternatives are predicted to achieve 0% choice share. Share percentages may not total to 1 in some instance due to rounding. "UQ" = unique, "AD 1" = asymmetric dominance with one decoy, "AD 2" = asymmetric dominance with two decoys. Alternatives C and F were used as inferior Other alternatives in some conditions and changed to Decoys in other conditions. Whether C or F was a Decoy or inferior Other alternative in a set is indicated where choice share is presented. Because CP and WP were inferior in all cases, expected share for them was 0%. Alternative "D"= $\text{COMPETITOR}_{\text{D(Best)}}$, "G" = $\text{COMPETITOR}_{\text{G(Middle)}}$, and "A" = $\text{COMPETITOR}_{\text{A(Worst)}}$.

*p<.1.

**p<.05.

***p<.01 (all binomial tests, one-tailed).

10.11. A short note on ACA conjoint analysis

In conjoint analysis, products are defined by specific levels on attributes. How much a respondent likes a product is modeled by the sum of part-worths, or *utilities*, for each of the product's attribute levels. A higher overall utility for one alternative relative to others, suggests that this alternative will be better liked and more likely to be chosen. To estimate these utilities, respondents are asked to evaluate fully or partially profiled product concepts that are described by their attributes and indicate which concept they prefer. By analyzing that pattern of trade-offs respondents make, conjoint analysis can estimate the importance of each attribute level implied by the trade-offs. These part worths for each specific level for each attribute describing a product concept can then be summed to determine a respondent's overall utility for that product. In this way, conjoint analysis is able to estimate overall product utilities for all possible product combinations through respondent evaluation of a limited number of product concepts.

Adaptive Conjoint Analysis (ACA) is a specific conjoint analysis technique that presents successive pairs of partially profiled alternatives (usually 2 – 5 attributes) and then asks respondents to indicate how strongly they prefer one alternative to another. Respondents then assign points to a limited selection of fully profiled holdout alternatives, with more points indicating higher favorability. Estimations based on the trade-offs respondents make, calibrated by point ratings of the fully profiled alternatives, generate part worths, as outlined above.

ACA is better able to stabilize utility estimates with smaller sample sizes and allows for the use of fewer questions as compared to other conjoint techniques. This reduces the potential for respondent fatigue and is done by adapting questions to respondent's previous answers. Respondents are only asked in detail about attributes or attribute levels that are found to be relevant earlier in their interview.[69]

[69] This description of ACA is based on literature included with Sawtooth Software's SSI Web software.