The effects of spatial constraints on choosing recommended products.

by

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Abstract

The main objective of this study was to examine the effects of spatial constraints on choosing recommended products. Two experiments were conducted where the level of spatial constraint was operationalized by a small room and a large room. The study showed that as expected a spatial constraint caused a consumer to choose the not recommended product. This effect is mediated by a feeling of confinement. In addition, the effect of a chronic reactance level of consumers was taken into account. However, the chronic reactance level of consumers did not have an influence on this choice. In the first experiment the method of recommendation was operationalized as an advertisement. However, an advertisement always causes some level of reactance because of its inherent nature to influence. In the second experiment the recommendation method was a personal recommendation which was not expected to cause some level of reactance. The personal recommendation did not have an influence on the choice of consumers. Concluding, this study showed that a recommendation in a small room might have an adverse effect; customers choosing the not recommended product. Important managerial implications and directions for further research are given.

Key words: spatial constraints, reactance, recommendations, advertisements and word-of-mouth.
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The effects of spatial constraints on choosing recommended products.

Abstract in Dutch

Het hoofddoel van dit onderzoek was te onderzoeken wat de effecten van ruimtelijke beperkingen op het kiezen van aanbevolen producten zijn. Twee experimenten werden uitgevoerd waar de ruimtelijke beperking werd geoperationaliseerd als een kleine kamer en een grote kamer. Uit het onderzoek bleek het verwachte resultaat: dat een ruimtelijke beperkingen er voor zorgt dat een consument het niet aanbevolen product kiest. Dit effect werd gemedieerd door het gevoel van opsluiting. Daarnaast werd rekening gehouden met het effect van het chronische 'reactance' niveau van consumenten. Uit het onderzoek blijkt dat het chronische 'reactance' niveau van consumenten geen effect had op de keuze van consumenten. In het eerst experiment werd de aanbeveling methode geoperationaliseerd door een advertentie. Een advertentie roept altijd een bepaalde mate van 'reactance' op omdat het doel van een advertentie altijd het beïnvloeden van consumenten is. In het tweede experiment was de aanbeveling methode persoonlijke aanbeveling gebruikt waarbij niet verwacht werd dat 'reactance' zou optreden. Uit het onderzoek blijkt de een persoonlijke aanbeveling geen effect had op de keuze van consumenten. Concluderend, dit onderzoek toont aan dat een aanbeveling in een kleine ruimte een averechts effect kan hebben; consumenten kiezen het niet aanbevolen product. Belangrijke management implicaties en richtingen voor vervolgonderzoek worden gegeven.

Belangrijkste termen: ruimtelijke beperkingen, 'reactance', aanbevelingen, advertenties en mond-tot-mondreclame.

Niels Lettinga

De effecten van ruimtelijke beperkingen op het kiezen van aanbevolen producten.

Introduction

Imagine walking into a store; you see the products, the salesperson, other consumers, the color of the walls and lots more. But how does the actual physical size of the space influence you? More specific, how does it influence your buying behavior? As populations grow and urban areas become more crowded, the need to understand the effect of spatial constraints on consumer decisions will become more important. Spatial constraints can be interpreted as the volume of a room and density of people inside the room. Hall (1966) proposed that spatial constraints can induce different semantic associations. He stated that chapels, which are small, are likely to induce feelings of restrictedness and confinement while cathedrals, which are large, are likely to induce feelings of openness and freedom. Moore el al., (1979) not only proposed that spatial constraints can have affective effects but also behavioral effects. They find that a low ceiling encourages different kinds of play as compared to someone playing in a room with a high ceiling. Low ceilings tend to evoke quieter and restricted play while high ceilings tend to evoke more active and freer play. Levav and Zhu (2009) found that consumers who were in a spatially constraining room, who had to choose between familiar and unique products chose more unique products. Furthermore, consumers who where in a spatially constraining room chose a greater variety of products.

But what if the products which consumers choose from are similar and there is no unique option? What will consumers, who are in a spatially constraining room, then do? Products are becoming more homogeneous, there are fewer possibilities to differentiate on the traditional properties like price and performance. This makes it more difficult for consumers to choose a product (Postrel, 2003; Veryzer, 1995). Therefore, organizations are trying harder to differentiate themselves from their competitors. Organizations can differentiate their products on various aspects, such as: quality, image, speed, access, brand image, unique styling, packaging and advertisements (Dekker et al., 2001; Carpenter and Sanders, 2007). Organizations use communication to inform consumers how they differentiate from their competitors. For example: "This product has a high quality." Thus, the organization recommends its own product. Using recommendations has its costs and benefits. On the one hand, consumers might welcome the given information because it makes choosing a product easier (Shugan, 1980). On the other hand, consumers may reject recommendations because they are perceived to influence their buying behavior (Kivetz, 2005). Thus, consumers might be skeptical regarding advertisements. Obermiller and Spangenberg (1998) defined consumer skepticism as "the tendency toward disbelief of advertising claims". They found that consumers

who are highly sceptical towards advertisements find advertisements less likeable, less believable and are less likely to be influenced by them. In a recent study, Obermiller and Spangenberg (2005) found that consumers who are highly sceptical were less likely to purchase the product or service displayed by the advertisement.

The above indicates that both a spatial constraint and a recommendation can make a consumer feel that his or hers' freedom is threatened. This can either be because of a smaller room that makes you feel confined or because of a perceived influence to buy a specific product. These effects can be explained by the psychological concept "reactance". Reactance is a motivational state that occurs when someone's freedom is restricted through the elimination of a behavior (Brehm, 1966). This results in the person trying to hang on to the restricted freedom. It has already been shown that spatial constraints and recommendations can induce reactance (Levav and Zhu, 2009; Fitzsimons and Lehmann, 2004). Thus, the research question which will be answered is:

When consumers have to choose between two similar products, i.e. no preference for either one, which product will they choose if one is recommended while being in a spatially constraining or not spatially constraining room.

This question is academically relevant because it has not been shown what a consumer will do in a spatially constraining room when he or she has to choose between two products which are the same except for the recommendation. There are different kinds of recommendations that are used in this study. A recommendation can be perceived as an intent to influence, an example is an advertisement. The goal of an advertisement is always to inform or persuade consumers (Yeshin, 2006), which will cause reactance. Consumer therefore might reject a recommendation via an advertisement because they perceive it as an intent to influence (Kivetz, 2005; Obermiller and Spangenberg, 1998). A recommendation can also be perceived as no intent to influence, and therefore will not cause reactance. An example is Word-of-Mouth (WoM). Word-of-Mouth is informal advice passed between consumers. It is usually interactive, swift, and lacking in commercial bias. Several studies have shown that word-of-mouth communications frequently has a large impact of the evaluation of products (Herr et al., 1991). The first experiment in thus study will use an advertisement as the recommendation method, where one advertisement is expected to cause little reactance and the other advertisement is expected to cause high reactance. The second experiment in this study will use WoM and advice from a salesperson as recommendation methods.

In addition, this study also has managerial relevance. It is very interesting to know that spatial constraints cause variety seeking but how often are products really unique? It is more common to find products that are perceived to be similar. Furthermore, every physical store has the possibility to be spatially constraining. Either the store itself is small or there is a high density of customers in the store which causes a consumer to feel spatially constraint. Thus, because all physical stores have the possibility to be spatially constraining and most products are perceived to be similar makes this study broadly applicable. A possible recommendation can be that a small store should display fewer recommendations than a larger store.

Reactance

As stated before, reactance is a motivational state that occurs when someone's freedom is restricted through the elimination of a behavior (Brehm, 1966). There are three kinds of reactance: interpersonal, impersonal and self-imposed. Interpersonal threats to freedom involve one person trying to influence another person. A relevant example is an advertiser pressuring a consumer to buy their products. Impersonal threats to freedom, also called "barriers", do not involve influence attempts from one person to another. An example of an impersonal threat to freedom is product scarcity. When a threat to freedom is personally directed it is more likely to induce reactance than when a threat to freedom is impersonally directed (Hammock and Brehm, 1966). Self-imposed treats to freedom occur when a person is about to make a decision. According to Clee and Wicklund (1980) there are two mediators between the experienced threat to freedom and if reactance occurs and to what degree. First, presence or absence of freedom. This means that in order for reactance to occur, a person must expect to have a free choice. Second, importance of freedom. Meaning that the more important the choice is for a person the higher the level of reactance (Clee and Wicklund, 1980). Another important factor is that when people expect that their choice and the consequential outcome are dependent, they will experience higher levels of reactance than when they expect that their choice and the consequential outcome are independent (Brehm, 1966; Fitzsimons, 2000).

Reactance has been proven to be very important in consumer research (Clee and Wicklund, 1980). An example is given by Fitzsimons (2000). He states that when a consumer is faced with a stockout, which is a barrier, he or she is less satisfied with the decision process and is less likely to return to the store. Fitzsimons (2000) found that personal commitment and decision difficulty are the two leading factors in explaining the consumer responses to stockouts. Personal commitment is determined by the preference for an option, if the option is included in the consideration set and if the stockout is personally directed.

Other examples of topics in consumer research that can cause reactance are spatial constraint and recommendations (Levav and Zhu, 2009; Fitzsimons and Lehmann, 2004). These topics will be discussed next.

Spatial constraint

Spatial constraints come in two general forms; either by customer density or by small physical places. First, customer density is caused when consumers' personal space is violated.

Violations of a person's personal space can cause tension and discomfort and ultimately lead to a state of reactance (Edney et al., 1976). The study of violations of one's personal space is called "proxemics". An example; Underhill (1999) found that people move away from a product they have been looking at for a while if their personal space is constantly violated because other consumer are bumping into them. Second, small physical places, which are the focus in this article, will be discussed next.

Meyers-Levy and Zhu (2007) first examined the effect of spatial constraint and the effects that it has on feelings of confinement and freedom. They used the ceiling height of their laboratory to induce feelings of spatial constraint to the participants of their experiment. They found that participants who were confronted with the low ceiling had more feelings of restriction and participants who where confronted with the high ceiling had more feelings of freedom. Meyers-Levy and Zhu (2007) did not examine reactance per se. They measured feeling of restriction and freedom, which is closely related to reactance. Another study by Levav and Zhu (2009) measured reactance directly. Levav and Zhu (2009) studied how spatial constraints can affect consumers' choices. They found that a spatially constraining environment, as determined by aisle width and customer density, caused consumers to choose more unique and varied products. Thus, relatively confining spaces will lead to greater variety seeking. The authors found that this effect was caused by feelings of confinement which activated a perceived threat to their freedom. Hence, reactance is the underlying mechanism at work here.

Recommendations

Consumers are faced with more and more choices each day. This makes it harder for consumers to choose the products that best suit them. Recommending a product makes it easier for consumers to choose a product. Recommendations therefore reduce the effort required to make a decision. Also, it reduces the uncertainty surrounding a decision (Shugan, 1980). But this might not always be the case. Wicklund et al. (1970) conducted a classic experiment which showed that a high-pressure salesperson can induce reactance. They manipulated the level of vested interest in the sale of a specific product. They found that consumers who were exposed to the high vested interest condition rated the product, which was recommended by the salesperson, less favorable. Closely related to this study, Reizenstein (1971) did a study involving a personal selling attempt. Consumers were either faced with a soft-sell or hard-sell situation. Evidently, the hard-sell situation was quite

forceful while the soft-sell was quite modest in comparison. Reizenstein (1971) found that hard-sell was less effective in changing preferences than the soft-sell. All these studies above have in common that when consumers perceive that they are being influenced, reactance will occur. In a recent article, Fitzsimons and Lehmann (2004) showed that recommendations that contradict initial preferences can cause someone to choose the not recommended product. Fitzsimons and Lehman (2004) indicate that it would be interesting to research what will happen if participants would receive a recommendation while he or she is forming their attitude towards the choice options, which is done in this study. The above showed that recommendations can cause reactance. There are however also recommendation methods that do not cause reactance, i.e. Word-of-Mouth, which will be discussed prior to experiment two.

There is some research which combines recommendations and a measure of spatial constraints, i.e. physical proximity. First, Albert and Dabbs (1970) found that when people get closer to someone who is trying to persuade them, they are less likely to accept arguments because of the threat to their personal space. Albert and Dabbs (1970) also mention reactance as a very likely underlying mechanism. Second, Wicklund (1974) found that when people get closer to an interviewer, they are less likely to answer a personal question. These two studies suggest that spatial constraints induce reactance and might have an impact on how susceptible and willing a consumer is to accepting a recommendation.

Based on the literature review, the following hypothesis was defined:

H_1: *When there is a spatial constraint present, the not recommended product will be chosen more often than when no spatial constraint is present.*

Reactance can not only differ between situations, reactance can also differ between individuals (Hunsley, 1997). Hong and Faedda (1996) created the Hong Psychological Reactance Scale to directly measure an individuals' predisposition to experience reactance. In this study this predisposition will be called the chronic reactance level of an individual. Consumers with a high chronic reactance level will experience reactance faster and are as a result more prone to the effects of this study. Therefore, the following hypotheses were defined:

H_2: *Consumers with a high chronic reactance level will choose the product that is not recommended more often than consumers with a low chronic reactance.*

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H₃: The effect of spatial constraint on the likelihood of choosing the recommended product will be stronger for consumers with a high chronic reactance level.

Method

The research design is a two (room: small room vs large room) by two (reactance: high chronic reactance level vs low chronic reactance level) between-subjects design, see figure 1. In the two rooms there are two products, where one is more strongly recommended by the manufacturer than the other. To find two advertisements which are different in the level of reactance caused, a pretest was done.
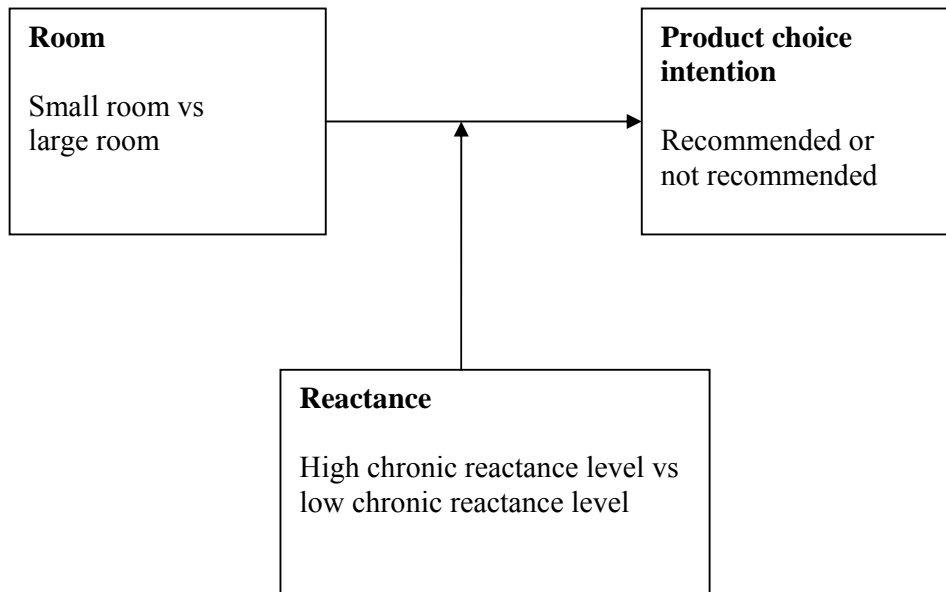
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┌─────────────────────────┐                    ┌─────────────────────────┐
│ Room                    │                    │ Product choice          │
│                         │                    │ intention               │
│ Small room vs           │ ─────────────────► │                         │
│ large room              │         ▲          │ Recommended or          │
│                         │         │          │ not recommended         │
└─────────────────────────┘         │          └─────────────────────────┘
                                     │
                    ┌─────────────────────────────┐
                    │ Reactance                   │
                    │                             │
                    │ High chronic reactance level vs │
                    │ low chronic reactance level │
                    │                             │
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Figure 1. Conceptual model

Pretest

Before the actual experiment took place, for two advertisements it was tested whether the perceived persuasiveness of the different recommendations differed in a significant way. The advertisements displayed granola bars. Granola bars were chosen as a product category because there were expected to be relevant to participants, but not so involving in that reactance would be expected to be especially strong (Fitzsimmons and Lehmann, 2004). One advertisement was for the granola bar "Eat Natural" and the other advertisement was for the granola bar "Wallabybar". Fifteen students filled in the pretest. The perceived persuasiveness scale was used by Cesario et al. (2004) and consists of six variables: persuasive, convincing, effective, coherent, compelling and influential. These six variables were first translated into Dutch. The advertisement which was expected to arouse more reactance (M=4.08, SD=1.25) caused a higher perceived persuasiveness than the advertisement which was expected to

arouse little reactance (M=3.79, SD=0.98). But, this difference was not significant (t (14)=-0.88, $p = 0.39$). Three of the six variables showed the expected result while the other three did not. The researcher determined that this was due to the translation into Dutch. Another test was done with three of the initial six items. Now, a significant effect (t (14)= -4.36, $p = 0.001$) was found where the advertisement which was expected to arouse more reactance was perceived more persuasive (M=4.62, SD=1.35) than the advertisement which was expected to arouse little reactance (M=3.31, SD=1.00). For the actual experiment, three additional variables were added that more closely resembled the three variables that showed the expected result.

Subjects

88 students from the University of Twente participated in the experiment. They participated in fulfillment of a credit requirement, received a small stipend or participated voluntarily. Participants signed up for the experiment over the internet or were recruited on the university campus. 49 women participated in the experiment. The average age was 22 with a range of 18 to 30. The participants were predominantly Dutch.

Dependent variables

The experiment contained several dependent variables, mediators and a personality measure which was an independent variable. These were all measured with different constructs. The participants were asked to answer the questions on a seven point likert scale in which they had to point out to what extent they agreed or disagreed with the statement, see appendix 1. First, the main dependent variable is discussed; product choice. Second, two mediators are discussed that can mediate the expected causal link; perceived persuasiveness and reflection of current body state. Finally, a personality measure is included: the reactance measure.

Product choice

This dependent variable showed which advertisement the participants chose. Either the advertisement with a recommendation that caused a high level of reactance or the advertisement with a recommendation that caused a low level of reactance. The participants chose a product advertisement and did not choose an actual product, thus product choice intention was measured.

Perceived persuasiveness

This dependent variable was measured with a questionnaire consisting of 6 items like: "How persuasive do you think the advertisement is?" and "How compelling do you think the advertisement is?" ($\alpha = 0.85$ Wallabybar) and ($\alpha = 0.80$ Eat natural). This list determined how persuasive the participants thought the advertisements were. This scale is based on Cesario et al. (2004).

Reflection current body state

This dependent variable was measured with a questionnaire consisting of 3 items like: "How inhibited do you feel right now?" ($\alpha = 0.84$). This list determined how spatially constraining participants felt. This scale is based on Meyers-Levy and Zhu (2007).

Reactance measure

The independent variable "room" and the presence of a recommendation might arouse reactance. It is expected that the individual level of reactance of the participants has an influence on the decision of the product and the decision process. This variable was measured with a questionnaire consisting of 11 items like: "Regulations trigger a sense of resistance in me" and "I become angry when my freedom of choice is restricted" ($\alpha = 0.78$). This list determined how likely a person is to initiate reactance. This scale is based on Hong and Faedda (1996).

With the use of a median split, the reactance measure was used to divide the participants into two groups: participants with low reactance and participant with high reactance. The 44 participants with low reactance ($M=3.40$, $SD=0.50$) scored significantly lower (t (86)= -12.51, $p < 0.01$) in the reactance measure than the 44 participants with the high reactance ($M=4.66$, $SD=0.45$).

Manipulation checks

A number of manipulation questions were asked. Three questions were used to check if the participants knew the products that were in the advertisements and to what extend they are knowledgeable and bought these products. Two questions were used to ask the participants about how large or small they felt the room was. Finally, the purpose of the experiment was asked.

Procedure

First, all participants were asked to wait in the central hall. This was done to ensure that all participants were initially seated in the same size room. Then the participant was asked to take place in one of the two rooms. The two rooms were almost identical. The only difference was that the first room was 4 by 4 m^2 (large room) and the second room was 5 by 2.5 m^2 (small room).

Second, all participants filled in a short questionnaire with their demographic information. This contained data like gender, age, nationality and education. Also, all participants signed a consent form. Complete anonymity was guaranteed. This was followed by a series of unrelated studies.

Third, the participant was then randomly assigned to one of two conditions. One group was given the Wallabybar advertisement with the recommendation that caused more reactance and the Eat natural advertisement with the recommendation that caused little reactance, see figure 2. The other group was given the Eat natural advertisement with the recommendation that caused more reactance and the Wallabybar advertisement with the recommendation that caused little reactance, see figure 3. This was done because in this way the influence of the different brands was counterbalanced. Both groups were first introduced to the cover story:

A large retailer wants to add a new granola bar to their assortment. They have narrowed their choice down to two possible candidates: Wallabybar and Eat Natural. In order to determine which product will best suit the Dutch consumers, we would like you to choose your preferred product. Therefore it is important that you closely evaluate both advertisements before choosing. After you have made your choice you will receive the granola bar that you have chosen.

Figure 2. Advertisements

Figure 3. Advertisements

Finally, all participants were asked to fill in the questionnaire. During this process, the participants could constantly see the advertisements. After that the participants were debriefed and excused.

Analysis

The research data were analyzed with SPSS 16. All data were analyzed with ANOVA's with independent variables Room (small room vs large room) and Reactance (high chronic reactance level vs low chronic reactance level).

Results

Participants were on average not knowledgeable about granola bars (M=2.92, SD=1.59) and did not buy them frequently (M=2.23, SD=1.43). 68 of the participants indicated they did not know either one of the granola bars. 19 participants indicated that they knew Eat natural and only 1 person indicated he or she knew the Wallabybar. When asked if the room which the participants occupied was small the participants who were in the small room perceived it as smaller (M=3.05, SD=1.32) than the participants who were in the large room (M=2.37, SD=1.20) and this difference was ($F_{(1,84)}$= 9.96, $p = 0.02$) significant. But when asked if the room which the participants occupied was large there was no significant difference between the two groups ($F < 1$).

Product choice

In order to test whether the room size and the reactance level of the participants had an effect on the manner in which they chose the high or low reactance product a Logistic Regression with Room and Reactance of participants and the interaction between these two variables as independent variables and Product choice as the dependent variable was done. For Room the Wald's statistic was 4.09, with 1 degree of freedom, resulting in a p-value of 0.04. The participants who were in the small room chose the low reactance product more often (M=1.71, SD=0.46) than the participants who where in the large room (M=1.50, SD=0.51). 30 of the 42 (71%) participants in the small room chose the low reactance products while only 23 out of the 46 (50%) participants in the large room chose the low reactance products. Thus, Room was significant in explaining product choice. This confirmed hypothesis 1. There was no main effect of Reactance of participants. Ward's statistic was 0.02 with 1 degree of freedom, resulting in a p-value of 0.88. This rejects hypothesis 2. Furthermore, there was no interaction–effect between Room and Reactance of participants. Ward's statistic was 0.02 with 1 degree of freedom, resulting in a p-value of 0.88. This rejects hypothesis 3.

Perceived persuasiveness

Wallabybar

In order to test whether the advertisements had the desired effect on the perceived persuasiveness an ANOVA with Advertisement as independent variables and Perceived Persuasiveness as the dependent variable was done. A main effect of Advertisements was

found (F (1,86)= 97.03, $p < 0.01$). When the participants received the advertisement where Wallabybar was high reactance the perceived persuasiveness of the Wallabybar was higher (M=4.75, SD=0.95) than that of the Eat natural (M=2.69, SD=1.01).

In order to test whether the room size and the reactance level of the participants had an effect on the perceived persuasiveness an ANOVA with Room and Reactance of participants as independent variables, Advertisement as a covariate and Perceived Persuasiveness as dependent variable was done. No effects were significant ($F < 1$).

Eat natural

In order to test whether the advertisements had the desired effect on the perceived persuasiveness an ANOVA with Advertisement as independent variables and Perceived Persuasiveness as the dependent variable was done. A main effect of Advertisements was found (F (1,86)= 93.71, $p < 0.01$). When the participants received the advertisement where Eat natural was high reactance the perceived persuasiveness of the Eat natural was higher (M=4.70, SD=0.83) than that of the Wallabybar (M=2.64, SD=0.74).

In order to test whether the room size and the reactance level of the participants had an effect on the perceived persuasiveness an ANOVA with Room and Reactance of participants as independent variables, Advertisement as a covariate and Perceived Persuasiveness as the dependent variable was done. A marginally significant main effect of Room was found (F (1,83)= 3.72, $p = 0.06$). The participants who were in the small room perceived more persuasiveness (M=3.82, SD=1.33) than the participants who where in the large room (M=3.57, SD=1.28). Furthermore, a main effect of Reactance of participants was found (F (1,83)= 6.36, $p = 0.01$). The participants with high reactance perceived more persuasiveness (M=4.00, SD=1.28) than the participants with low reactance (M=3.88, SD=1.26). The other effects were not significant ($F < 1$).

Reflection current body state

In order to test whether the room size and the reactance level of the participants had an effect on the reflection of their current body state an ANOVA with Room and Reactance of participants as independent variables and Reflection Body State as the dependent variable was done. A marginally significant main effect of Reactance of participants was found (F (1,84)= 3.20, $p = 0.08$). The participants with high reactance experienced more confinement (M=2.99, SD=1.20) than the participants with low reactance (M=2.59, SD=1.01). The other effects were not significant ($F < 2$).

Conclusion

The main purpose of this experiment was to investigate which product consumers would choose if one is recommended while being in a spatially constraining or not spatially constraining room. The main conclusion is that consumers chose the not recommended product, i.e. the advertisement which was expected to arouse little reactance, more often while being in a spatially constraining room. This is congruent with our expectations.

However, the main effect for chronic reactance level and the interaction effect of the room and the chronic reactance level were not significant. This means that the reactance level of consumers does not influence which product they chose. A possible reason for this is that the chronic reactance level scale was translated into Dutch and this translation has not been validated yet. Furthermore, the chronic reactance level scale was at the end of the questionnaire thus participants might have been tired and did not pay enough attention. Although both these effects were not significant an important conclusion can be drawn. The effect of room size alone caused consumers to choose the not recommended product, the individual difference did not have an influence.

Perceived persuasiveness

The perceived persuasiveness was higher for Eat natural when the Eat natural advertisement was expected to cause high reactance and the perceived persuasiveness was higher for Wallabybar when the Wallabybar advertisement was expected to cause high reactance. This confirms that the advertisement caused the desired perceived persuasiveness. Thus, the manipulation used did work.

When the Eat natural advertisement was recommended, the consumers who were in the small room perceived more persuasiveness. Furthermore, when the Eat natural advertisement was recommended, the consumers who have a higher reactance level perceived more persuasiveness. Thus, both room size and the reactance level of consumers can cause perceived persuasiveness. A possible explanation is that both a spatially constraining room and a higher reactance level causes a person to experience more reactance. This will heighten their senses to persuasive attempts, which also causes reactance. Although the small room caused more perceived persuasiveness, it itself did not have a significant effect on the choice of the consumer. Thus, no mediation could be reported.

Reflection current body state

Finally, consumers with high reactance in the spatially constraining room felt more confinement than consumers with low reactance. Besides this affective result, a similar cognitive result was found. Consumers who were in the small room perceived it as smaller than the participants who were in the large room. This suggests that participants felt more spatially constraint in the small room, but again no mediation could be reported.

Concluding, there are three possible constructs which can cause reactance: room size, the recommendation and chronic reactance level. In order to determine which of these constructs caused the reactance which in turn led to the consumers choosing the not recommended product, each of the constructs will be discussed next. First, the results showed that the room size leads to the not recommended product being chosen. However, the expected role of reflection of the current body state that was supposed to mediate the link between room size and product choice was not found. Second, the chronic reactance level did not have an effect on the product choice. Third, the results showed that the high reactance recommendation indeed caused more reactance. However, the recommendation was not included as an independent variable; instead it was counterbalanced between participants. Thus, no mediation could be reported. Thus, both the room size and the recommendation might have caused reactance. Therefore, the recommendation caused some bias which might have influenced the expected link between room size and product choice.

Discussion

The initial results look promising. However, a major limitation of this first experiment was the lack of a reactance baseline. When a consumer perceives that he or she is influenced reactance will occur. In order to minimize the reactance level created by the advertisements, one advertisement was developed to minimize the perceived intent to influence. But because the ultimate goal of an advertisement always is to influence, a low level of reactance will probably always occur. Thus, everything that could be done to minimize the reactance generated by the advertisement was done but because of the inherent nature of an advertisement to influence, a minimum level of reactance was probably generated.

The advertisements used also have some limitations. First, existing products were used. This might influence the results because the participants might have encountered them before and already have an attitude towards them. Second, two different products were used and therefore the products did not look the same. The esthetic of the products thus might have had an influence.

A third limitation is that only behavioral intention was measured. Although the participants were asked to closely evaluate both advertisements and they were told that they would receive the granola bar they had chosen, participant's involvement could have been low. When actual behavior is measured, the involvement of participants or consumers might have been higher.

The remarks above can be used for further research ideas. First, a recommendation method might be used that would eliminate generating reactance altogether. An example for a different recommendation method that might not cause any reactance is word-of-mouth. Second, the two products that participants might choose from can be the same product. Meaning that you let consumers think that they can choose from two different products while in fact they are the same. This way you can be sure that there are no esthetic differences. Third, in order to measure actual behavior a field study might be done or real product could be used.

Experiment 2: Word of mouth

Friestad and Wright (1994) proposed the Persuasion Knowledge Model. This model states that a persuasion agent and a persuasion target interact when the agent tries to persuade the target. The persuasion target, usually the consumer, is not a helpless victim of the persuasion attempt by the agent, usually the salesperson. Consumers develop personal knowledge about the different tactics that salespersons use. This knowledge helps consumers to cope with the salespersons persuasion attempt. Although most research on persuasion has focused on advertising and personal selling, persuasion episodes also occur among consumers (cf., Hamilton, 2003). An example of persuasion episodes among consumers is word-of-mouth. One of the reasons why word-of-mouth is so effective is the perceived absence of marketing involvement (Dye, 2000). Thus, reactance is expected to occur when confronted with a salesperson but not expected to occur when confronted with a friend. Rejecting a recommendation is more common practice and more appropriate within a salesperson-consumer relationship (Kirmani and Campbell, 2004; Williams et al., 2004). Thus, consumers are more inclined to reject a recommendation from a salesperson and they are more inclined to follow a recommendation from a friend.

Based on the literature review, the following hypotheses were defined.

H_1: When there is a spatial constraint present, the not recommended product will be chosen more often than when no spatial constraint is present.

H_2: Consumers who are in a salesperson situation will choose the product that is not recommended more often than consumers who are in a WoM situation.

H_3: The effect of spatial constraint on the likelihood of choosing the recommended product will be stronger for consumers who are in a salesperson situation.

Method

The research design is a two (room: small room vs large room) by two (personal recommendation: WoM vs salesperson) between-subjects design, see figure 4. The personal recommendation is operationalised by a recommendation by other students which is called Word-of-Mouth or salesperson. In these rooms there are two products, where one is recommended and the other is not.

```
┌─────────────────────┐                        ┌─────────────────────┐
│ Room                │                        │ Product choice      │
│                     │                        │                     │
│ Small room vs       │──────────┐    ────────▶│ Recommended or      │
│ large room          │          │             │ not recommended     │
│                     │          │             │                     │
└─────────────────────┘          │             └─────────────────────┘
                                 │
                       ┌─────────────────────┐
                       │ Personal recommendation │
                       │                     │
                       │ WoM vs              │
                       │ salesperson         │
                       │                     │
                       └─────────────────────┘
```
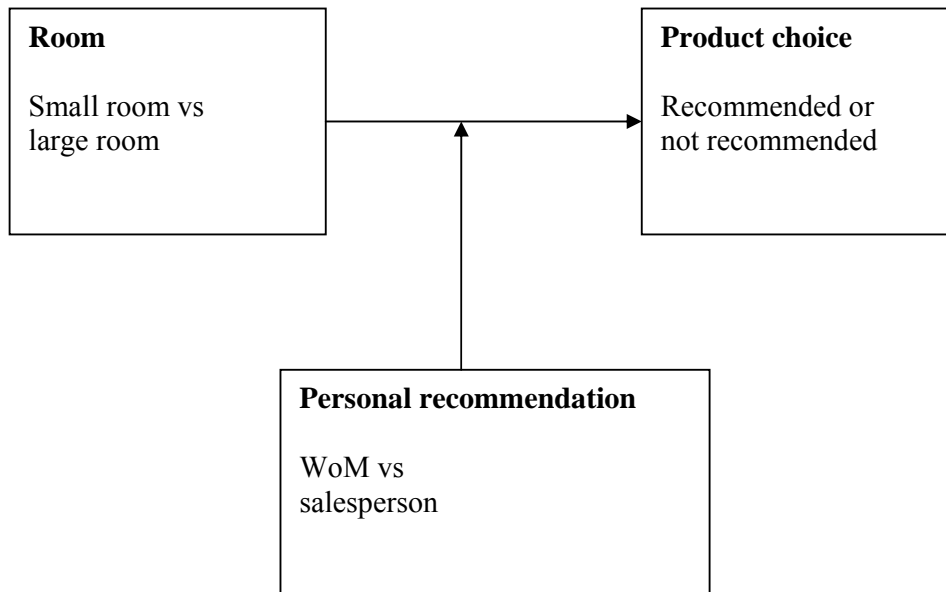
Figure 4. Conceptual model

Pretest

Before the actual experiment took place, two pretests were conducted. First, two products had to be found that would be different on some of its characteristics but would be perceived similarly by the participants. This was done in order to create the subjective experience of a choice. The product category wine was chosen because consumers tend to know little about wines and its characteristics (Taylor, 2008). 25 students were shown two wine labels, see figure 8. The names of the wines, Lavazzo and Lavento, are based on Liu, et al. (2011). These students were asked two questions: "Which rosé do you prefer" and "why". 13 students preferred Lavento and 12 students preferred Lavazzo. This would indicate that both labels are evaluated equally. But the more important question "why" made sure the two labels would be appropriate stimuli. Most students indicated that they noticed the slight differences between the two labels but knew too little about wines to base a decision on these

differences. Most of the students therefore guessed which wine they preferred. Thus, although there were small differences between the two wines which created the subjective experience of choice for students; the wines were actually perceived similarly.

Second, the perception of the room size was pretested. Four different measures were used. The reflection of the current body state was used which is the measure for the spatial constraint. The perceived spaciousness, which is a measure for the perceived spaciousness of the room. Finally, the students were asked to what extent they thought the room was small or large and what the actual size was of the room in m2. Even with a small sample almost all measures reached statistical significance and were all in the right direction. Therefore, the room size manipulation worked.

Subjects

81 students from the University of Groningen participated in the experiment. The participants were recruited on the university campus and participated voluntarily. 39 women participated in the experiment. The average age was 23 with a range of 18 to 30. The participants were predominantly Dutch.

Dependent variables

The experiment contained a dependent variable and several mediators. These were all measured with different constructs. The participants were asked to answer the questions on a seven point likert scale in which they had to point out to what extent they agreed or disagreed with the statement, see appendix 2. First, the main dependent variable is discussed; product choice. Second, two mediators are discussed that can mediate the expected causal link; perceived threat and reflection of current body state.

Product choice

This dependent variable showed which product the participants chose. Either the product that was recommended or the product that was not recommended. The participants chose an actual product, thus actual product choice was measured.

Perceived threat

This dependent variable was measured with a questionnaire consisting of 4 items like: "It felt as if the other person was trying to take away my freedom to form my opinion about

the wine" and "I considered advice from the other person to be an intrusion". This list showed in what manner participants perceived the communication from a friend or salesperson as a threat to their freedom. This scale is based on Conway and Schaller (2005).

This dependent variable showed some interesting findings with regard to the internal reliability. The Cronbach's Alpha for the four items combined was 0.61. When a factor analysis was performed there were two factors with eigenvalues larger than 1. The first two items scored high on the first factor and the last two items scored high on the second factor. The reliability for the first two items was ($\alpha = 0.80$) and for the last two items it was ($\alpha = 0.70$). The first two items are more related to the perceived threat of the researcher. The last two items are more related to individual level of reactance for each participant. The first two questions were seen as the possible mediator because they reflect the perceived influence the participants experienced.

The mediator "reflection current body state" ($\alpha = 0.83$) and the manipulation checks were the same as in experiment 1.

Procedure

First, participants entered the room. The room was 3.20 by 4 m^2. In the small room condition the room was reduced in size by putting three large boards in the middle of the room. Each board was 2.5m high and 1.3m wide. This effectively reduced the size of the room to 2.10 by 4m^2. In the large room condition the boards were placed to the right wall. This was done in order to make sure the two conditions were as identical as possible, see figure 5. Furthermore, the windows were covered with paper and the shades were down, see figure 6 and 7.

Figure 5. Three large boards

Figure 6. Windows with paper cover

Figure 7. Windows with shades

Second, all participants were told the following story in the salesperson condition:

> *I am doing my master thesis for a Dutch wine company. We are looking for new wines to introduce to the Dutch market. In front of you are two different wines. My boss, the marketing manager at my company, prefers rosé Lavazzo/ Lavento, however we want to know which rosé you prefer. So please look at the information provided accurately. When you have decided you will actually have the opportunity to try the rosé that you have chosen. Therefore it is important that you closely evaluate both bottles of rosé before choosing.*

Or the following story in the WoM condition:

I am doing my master thesis for a Dutch wine company. We are looking for new wines to introduce to the Dutch market. In front of you are two different wines. Most students till now prefer rosé Lavazzo/ Lavento, however we want to know which rosé you prefer. So please look at the information provided accurately. When you have decided you will actually have the opportunity to try the rosé that you have chosen. Therefore it is important that you closely evaluate both bottles of rosé before choosing.

When the participants were told the preference of the marketing manager or students the researcher pointed to the respective rosé. Both bottles of rosé were actually the same. So, the only difference between the two bottles was the label, which can be seen in figure 8 and 9.
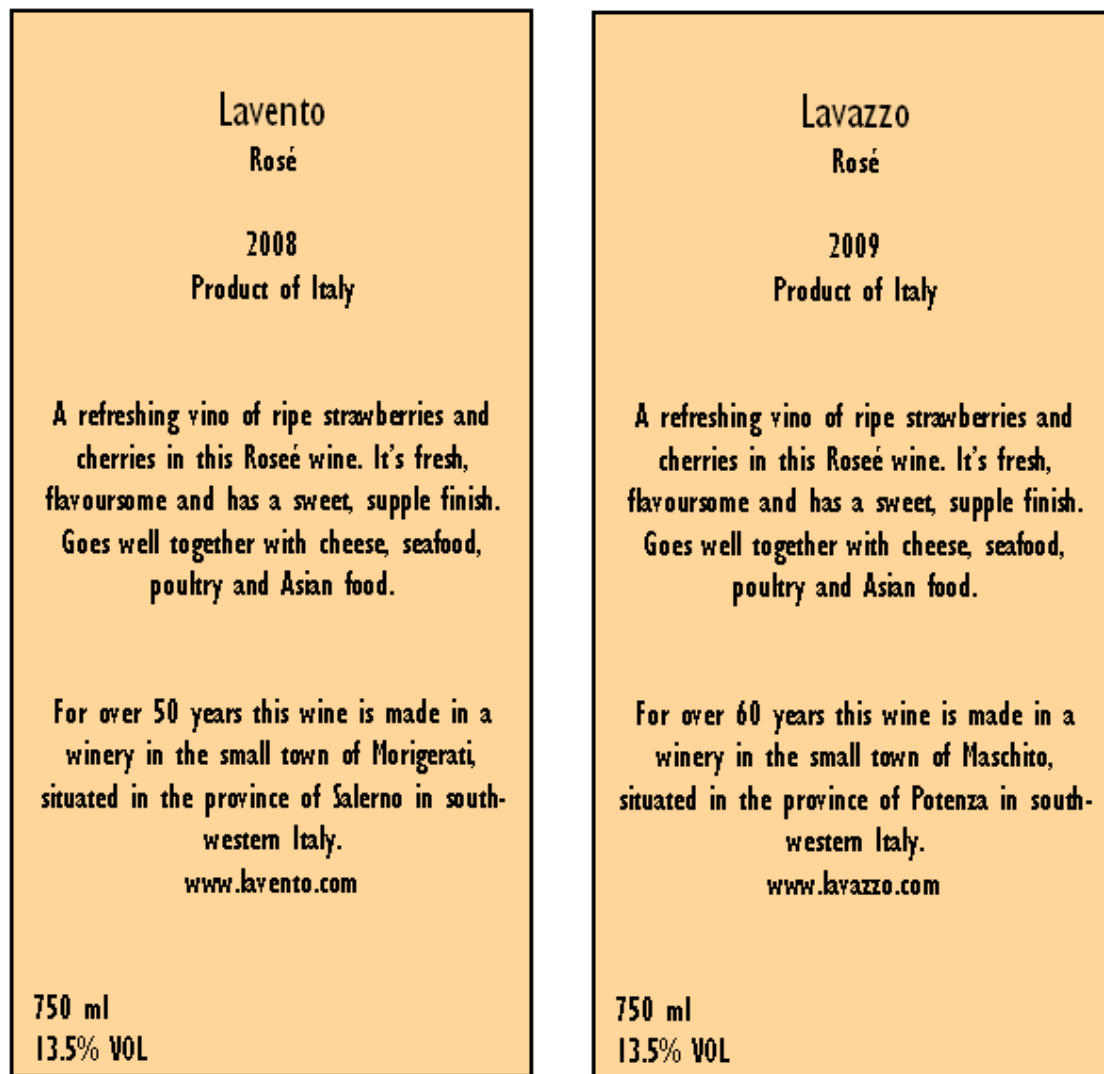
Figure 8. Rosé stimuli

Figure 9. Wine bottles and labels

Third, all participants were asked to fill in the questionnaire. Complete anonymity was guaranteed. After that the participants were debriefed and thanked for their participation.

Analysis

The research data were analyzed with SPSS 16. All data were analyzed with ANOVA's with independent variables Room (small room vs large room) and Personal recommendation (WoM vs salesperson).

Results

Participants were on average not knowledgeable about wines (M=3.43, SD=1.65) and do not buy them frequently (M=3.86, SD=1.95). Furthermore, the Lavento rosé was chosen by 55.6% of the students and the Lavazzo wine was chosen by 44.4% of the students. When asked if the room which the participants occupied was small the participants who were in the small room perceived it as smaller (M=5.33, SD=1.23) than the participants who were in the large room (M=3.25, SD=1.57) and this difference was (F (1,78)= 43.54, p < 0.01) significant. When asked if the room which the participants occupied was large the participants who were in the large room perceived it as larger (M=3.95, SD=1.52) than the participants who were in the small room (M=2.45, SD=0.99) and this difference was (F (1,79)= 27.77, p < 0.01) significant. When participants were asked to estimate the size of the room in m2, the participants in the large room perceived it as larger (M=13.49, SD=3.07) than participants in the small room (M=11.09, SD=3.23) and this difference was significant (F (1,79)=11.77, p < 0.01). The above results showed that the manipulations worked.

Product choice

In order to test whether the room size and personal recommendation had an effect on the manner in which the participants chose the recommended product or not recommended product a Logistic Regression with Room and Personal recommendation and the interaction between these two variables as independent variables and Product choice as the dependent variable was done. For Room the Wald's statistic was 3.41, with 1 degree of freedom, resulting in a p-value of 0.07. The participants who were in the small room chose the not recommended product more often (M=1.67, SD=0.47) than the participants who where in the large room (M=1.46, SD=0.51). 27 of the 40 (68%) participants in the small room chose the not recommended product while only 19 out of the 41 (46%) participants in the large room chose the not recommended product. Thus, Room was significant in explaining product choice. This confirmed hypothesis 1. There was no main effect of Personal recommendation. Ward's statistic was 0.08 with 1 degree of freedom, resulting in a p-value of 0.77. This rejects hypothesis 2. Furthermore, there was no interaction–effect between Room and Personal recommendation. Ward's statistic was 1.28 with 1 degree of freedom, resulting in a p-value of 0.26. This rejects hypothesis 3.

Perceived threat

In order to test whether the room size and personal recommendation had an effect on the perceived threat of the researcher an ANOVA with Room and Personal recommendation as independent variables and Perceived Threat of the researcher as the dependent variable was done. No effects were significant ($F < 1$).

In order to test whether the room size and personal recommendation had an effect on the individual level of reactance for each participant an ANOVA with Room and Personal recommendation as independent variables and Individual level of reactance for each participant as the dependent variable was done. No effects were significant ($F < 1$).

Reflection current body state

In order to test whether the room size and personal recommendation had an effect on the reflection of their current body state an ANOVA with Room and Personal recommendation as independent variables and Reflection Body State as the dependent variable was done. A significant main effect of Room was found ($F (1,77)= 23.63$, $p < 0.01$). The participants in the small room felt more confined ($M=4.27$, $SD=1.25$) than the participants in the large room ($M=3.01$, $SD=1.10$). The other effects were not significant ($F < 1$).

Mediation

Finally, a test was performed to investigate possible mediation effects (Baron and Kelly, 1986). In general, a variable may be considered a mediator when the independent variable significantly affects the mediator, the independent variable significantly affects the dependent variable, the mediator has a significantly unique affect on the dependent variable and the effect of the independent variable on the dependent variable becomes smaller when the mediator is included in the model. More formally, the determination that a variable is a mediator can be tested with statistically based methods like the sobel-test.

The independent variable was the Room and the dependent variable was the choice of the participants, i.e. choosing the recommended or not recommended product. Several mediators were tested: perceived threat and reflection of current body state. Only the reflection of the current body state filled all the requirements to be a mediator, see table 1.

Step	Independent variable	Dependent variable	Beta (standard error)	Significance
1. IV on DV	Room	Product choice	-0.44 (0.23)	P = 0.06
2. IV on mediator	Room	Confinement	3.64 (0.13)	P < 0.01
3. Mediator on DV	Confinement	Product choice	0.46 (0.19)	P = 0.01
4. IV on DV when mediator is included	Room and confinement	Product choice	-0.22 (0.26)	P = 0.41

Table 1. Mediation of confinement

The independent variable has a significant effect on the dependent variable. Furthermore, the mediator has a significant unique effect on the dependent variable. Finally, the effect of the independent variable on the dependent variable becomes smaller when the mediator is included, the beta decreased and the effect became not significant. The sobel-test showed a test statistic of 1.87 with a standard error of 0.75 which resulted in a marginally significant p-value of 0.06. Thus, the perceived confinement mediates the causal link between spatial constraint and product choice.

Conclusion

The main purpose of this experiment was to investigate which product consumers would choose if one is recommended while being in a spatially constraining or not spatially constraining room. The main finding is that consumers chose the not recommended product more often while being in a spatially constraining room. This thus replicated the findings of the first experiment. The main effect for personal recommendation and the interaction effect of the room and personal recommendation were not significant. Again, the possible moderator had no significant effect on the choice of consumers.

Perceived threat

The main contribution of the second experiment was the fact that a reactance baseline was created. The WoM condition was expected to arouse no reactance. Interestingly, there was no significant difference between the perceived threat generated by the WoM condition and the salesperson condition. There are two possible conclusions that can be drawn from this finding. Either both conditions caused reactance or neither of the conditions caused reactance. Because the average perceived threat was 3.66 on a seven point likert scale it is concluded that neither conditions caused reactance. In support of this conclusion; the personal recommendation variable had little effect on the mediators and the dependent variable. It seems that the personal recommendation manipulation had little effect overall.

The above findings indicate that the personal recommendation did not cause reactance to occur. Furthermore, the personal recommendation had no effect on which product the consumers chose. Therefore, the room size alone caused consumers to choose the not recommended product. Thus, it seems that the room size caused the higher level of reactance which in turn caused consumers to choose the not recommended product.

Reflection current body state

Consumers who were in the small room felt more confined than consumers who where in the large room. This indicates that the spatial constraint worked and consumers were influenced by it. Finally, a mediation analysis was performed. This analysis showed that the room size caused consumers to feel more confined which resulted in them choosing the not recommended product. The results of the first experiment already suggested that participants felt more spatially constrained in a small room and the second experiment formally proved

this suspicion. This second experiment therefore strengthens the findings of the first experiment.

Discussion

This experiment had several limitations. First, in order to create the two room conditions several large boards were introduced into the large room. However, these boards looked uncommon and therefore could have influenced the participants outside of the intended scope. For example, it might have had distracted participants or gave premature clues about the purpose of the experiment. On the other hand, when participants entered the room they immediately saw the two bottles of wine. They might have focused on the bottles on wine and therefore paid less attention to the boards.

Second, two different wine labels were created which had minor differences on specific pieces of information. Although a pretest determined that the two labels were appropriate stimuli, they could still have caused minor bias. For example, if a participant had a preference for the wine year 2008, that participants might have based his or her decision on that fact and not because of the two independent variables.

Third, the personal recommendation variable was operationalised by telling participants that either the wine was preferred by most students till now or by the researchers' boss, the marketing manager. This might not have been enough to cause the respective intended influence. Furthermore, the personal recommendation came from two different groups. On the one hand the recommendation came from the students and on the other hand the recommendation came from the proposed company. This difference also might have had an influence. Finally, the recommendation from the marketing manager was a recommendation from just one person. The recommendation from the students could be seen as a recommendation from many people. This difference also might have had an influence.

The remarks above can be used for further research ideas. First, a division of the room could be created which looked more realistic. Second, the personal recommendation could be operationalised in a different manner. For example, the same person could fulfill the role of the WoM condition and the salesperson condition. It is not uncommon for consumers to sell products to friends, e.g. Tupperware parties. At these parties a hostess invites his or her friends for an informal party where Tupperware products are sold. This setting could be used as both a WoM condition and a salesperson condition, depending how the friends perceive the party.

General discussion

The research question of this study was:

When consumers have to choose between two similar products, i.e. no preference for either one, which product will they choose if one is recommended while being in a spatially constraining or not spatially constraining room.

The main conclusion is that when consumers have to choose between two similar products when they are in a spatially constraining room, they choose the not recommended product more often. This effect is mediated by a feeling of confinement. Thus, when in a small room, consumers feel more confined and choose the not recommended product more often. When in a large room, consumers feel less confined and choose the not recommended and recommended product equally. The above results are displayed in figure 10.

Spatial constraint → Feeling of confinement → Product choice
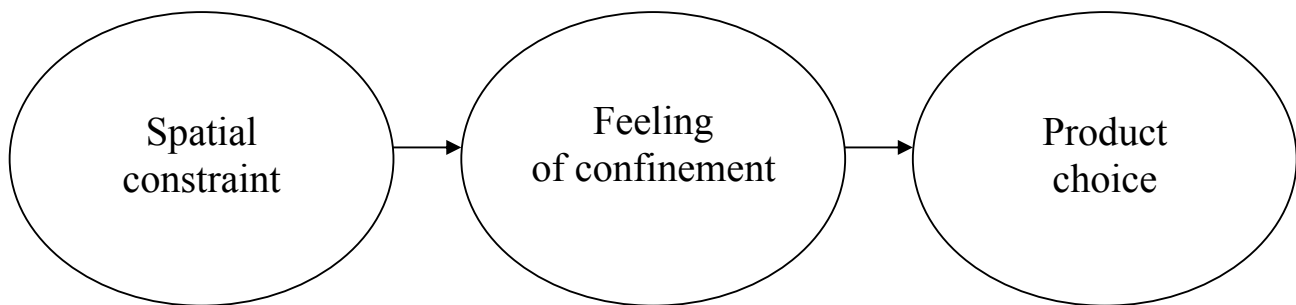
Figure 10. Mediation of feeling of confinement

Now follows a short discussion of how the above result was found. There was a problem with the first experiment. The recommendation was not included as an independent variable. Each participant saw the low and high reactance advertisement. Therefore, the precise effect of each recommendation method could not be analyzed. Furthermore, two different products were used which differed in their esthetic appearance and participants might have known the products. These shortcomings were solved by the second experiment. In this experiment the recommendation method was included as an independent variable and two similar, unknown products were used.

The moderator chronic reactance level in the first experiment and the moderator personal recommendation in the second experiment were both not significant in explaining product choice.

The main finding that spatial constraints caused a feeling of confinement is similar to what Levav and Zhu (2009) and Meyers-Levy and Zhu (2007) found. The feeling of confinement activated a perceived threat to their freedom which is closely related to reactance. However, Levav and Zhu (2009) found that consumers prefer more unique and varied products. This study showed that consumers when they have to choose between two similar products they choose the one that is not recommended when in a spatially constraining environment. This is similar to what Fitzsimons and Lehmann (2004) showed. They found that recommendations that contradict initial preferences can cause someone to choose the not recommended product. This study showed that the spatial constraint caused reactance which in turned caused consumers to choose the not recommended product. Thus, the recommendation itself did not have to cause reactance.

Confinement was found as a mediator. But why exactly did confinement mediate the causal link between spatial constraint and products choice? Instead of one of the other possible mediators? There are several explanations for this. First, only when in a small room is the actual size of the environment perceived. Consumers usually have enough open space surrounding them and therefore do not notice it. However, when a room is very small a consumer might notice that one's freedom is being threatened. Thus, a spatially constraining environment is more prevalent than a not spatially constraining environment. Second, humans pay more attention to negative information. This is called the negativity bias (Baumeister et al., 2001). They state that when humans are put in an environment where there are several sources of information, humans pay more attention to the negative information, i.e. threats, than to the positive information. An evolutionary adaptive explanation is that humans who pay more attention to negative information are more likely to overcome a threat and therefore pass along their genes. In this study the spatial constraint might be seen as a form of negative information. Confinement, which can be seen as a threat, will receive more attention than freedom, which can be seen as positive information.

Important managerial implication can be given. First, a recommendation in a small room might have an adverse effect; customers choosing the not recommended product. It is therefore advised to offer fewer recommendations in a small room. For example, products in an Albert Heijn to go (small supermarket) should have fewer recommendations than products in a regular sized Albert Heijn. An important criteria is that consumers should experience the feeling of confinement. Thus, when consumers experience the feeling of confinement then the not recommended product will be chosen more often. Second, spatial constraints are caused

by more than just the length and width of an environment. Research has shown that the height of the ceiling and customer density can also cause a consumer to feel spatially constraint. Customer density is caused when consumers' personal space is violated. Thus, in busy and crowded stores the effect of a recommendation might also be adversarial.

There might be other factors that influence the perceived spaciousness. The general field of environmental psychology, which analyzes the effect of environmental variables, or atmospherics (Kotler, 1973), on the behaviour of individuals. It has already been determined that spatial constraints, in the form of smaller spaces and customer density, can effect how confined consumers feel. But can non-physical environmental variables such as lighting and colour have an effect on perceived spaciousness. Stamps (2007) found that the more light in a room, the more spacious it is perceived. Thus, the common conception that the room's ceiling appears higher when it is painted lighter than the walls might be true. Stamps (2010) did not find an effect of colour on the perceived spaciousness when the amount of light is accounted for. Finally, Franz et al. (2003) found that rooms which have a window are perceived as more spacious. These examples show that even though the actual size of the room stays the same, adding more light or a window can increase the perceived spaciousness.

A recommendation can come in many forms. In this study two recommendation methods were used; advertisements and personal recommendation. Both methods caused the consumer to choose the opposite product of which was recommended. Thus it seems that several, if not all, methods of recommending can cause a consumers to choose the not recommended product.

A general limitation of the two experiments is that the participants might have been to complying. The main underlying mechanism in this study was reactance, which assumes that individuals do the opposite of what they are told. However, in a classical experiment, Milgram (1963) showed that participants would obey an authority figure and would perform behaviours that contradict their own values. This suggests that in a setting where participants voluntarily participate in an experiment, they are likely to obey the recommendations of the researcher. Thus, on the one hand participants want to follow the recommendation of the researcher and on the other hand reactance causes them to not follow the recommendation. The effects found in this study might therefore be stronger in another setting where there is no authority figure.

This study can be generalized to other settings. For example, in a non-commercial environment. When a patient visits a doctor, the doctor usually gives a recommendation of what is the appropriate course of action. For example, a patient has to take a new kind of medication. Wertheimer and Santella (2003) found that between 50% and 75% of patients do not adhere to the advice of the doctor. This can have dire consequence, for example every year around 125.000 U.S. citizens with treatable ailments die because of inappropriate medication usage (Wertheimer and Santella, 2003). Research has already shown that the size of a room can affect patient experience (Okken, et al., 2009). Okken et al. (2009) found that larger rooms promote self-disclosure and positively affects patient experience. This study suggests that a patient is more likely to follow the recommendation when being in a not spatially constraining environment. A recommendation is therefore that doctors should have spacious offices.

Furthermore, in on-line settings and in virtual reality there might also be ways in which this study can be used. Morikawa and Maesako (1998) designed the HyperMirror which provides an environment in which participants could feel as if they were in the same virtual environment even though were not in the same actual environment. Participants could therefore see themselves and other in the same virtual place. An interesting finding was that participants became responsive to the importance of virtual personal space. The participants moved out of the way if they perceived they were overlapping someone else in the screen. Thus, the perception of space is also established in on-line settings and virtual reality. Further research can and should give definite answers to these important topics.

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Appendix 1 Questionnaire experiment 1

What is your gender?

☐ Male

☐ Female

What is your age?

……………………………………………………………………………………………

What is your nationality?

☐ Dutch

☐ German

☐ Different: ……………………………………………………………………….

What do you study?

☐ Psychology

☐ Communication science

☐ Different: ……………………………………………………………………….

Decision satisfaction

		Extremely dissatisfied						Extremely satisfied
1.	How satisfied are you with your experience of deciding which bar to choose?		1	2 3 4 5 6				7

		Strongly disagree						Strongly agree
2.	I found the process of deciding which bar to select interesting.		1	2 3 4 5 6				7

		Strongly disagree						Strongly agree
3.	I found the process of deciding which bar to select frustrating.		1	2 3 4 5 6				7

		Strongly disagree						Strongly agree
4.	Several good options were available for me to choose from.		1	2 3 4 5 6				7

		Strongly disagree						Strongly agree
5.	I thought the choice selection was good.		1	2 3 4 5 6				7

		Strongly disagree						Strongly agree
6.	I would be happy to choose from the same set of product options on my next purchase.		1	2 3 4 5 6				7

Decision difficulty

	Strongly disagree					Strongly agree
1. I found choosing a bar to be very difficult.						
	1 2 3 4 5 6 7					

Decision confidence

	Strongly disagree					Strongly agree
2. I'm confident that I made the right choice.						
	1 2 3 4 5 6 7					

Perceived persuasiveness Wallabybar

		Not at all					Very much	
1.	How persuasive do you think the advertisement is?	1	2	3	4	5	6	7

		Not at all					Very much	
2.	How influential convincing do you think the advertisement is?	1	2	3	4	5	6	7

		Not at all					Very much	
3.	How compelling do you think the advertisement is?	1	2	3	4	5	6	7

		Not at all					Very much	
4.	How effective do you think the advertisement is?	1	2	3	4	5	6	7

		Not at all					Very much	
5.	How convincing do you think the advertisement is?	1	2	3	4	5	6	7

Esthetic Wallabybar

	Not at all						Very much
1. How beautiful do you think the advertisement is	1	2	3	4	5	6	7

	Not at all						Very much
2. How attractive do you think the advertisement is	1	2	3	4	5	6	7

	Not at all						Very much
3. How pretty do you think the advertisement is	1	2	3	4	5	6	7

Perceived persuasiveness Eat natural

		Not at all						Very much
1.	How persuasive do you think the advertisement is?	1	2 3 4 5 6					7

Not at all   Very much

1. How persuasive do you think the advertisement is?

1 2 3 4 5 6 7

Not at all   Very much

2. How influential do you think the advertisement is?

1 2 3 4 5 6 7

Not at all   Very much

3. How compelling do you think the advertisement is?

1 2 3 4 5 6 7

Not at all   Very much

4. How effective do you think the advertisement is?

1 2 3 4 5 6 7

Not at all   Very much

5. How convincing do you think the advertisement is?

1 2 3 4 5 6 7

Esthetic Eat natural

		Not at all						Very much
1.	How beautiful do you think the advertisement is	1	2 3	4	5	6	7	
2.	How attractive do you think the advertisement is	1	2 3	4	5	6	7	
3.	How pretty do you think the advertisement is	1	2 3	4	5	6	7	

Reflection current body state

		Not at all						Very much
1.	How free do you feel right now?							
		1	2	3	4	5	6	7

		Not at all						Very much
2.	How unrestricted do you feel right now?							
		1	2	3	4	5	6	7

		Not at all						Very much
3.	How open do you feel right now?							
		1	2	3	4	5	6	7

		Not at all						Very much
4.	How encumbered do you feel right now?							
		1	2	3	4	5	6	7

		Not at all						Very much
5.	How inhibited do you feel right now?							
		1	2	3	4	5	6	7

		Not at all						Very much
6.	How confined do you feel right now?							
		1	2	3	4	5	6	7

Reactance

		Strongly disagree							Strongly agree
1.	Regulations trigger a sense of resistance in me.	1	2	3	4	5	6	7	

		Strongly disagree							Strongly agree
2.	I find contradicting others stimulating.	1	2	3	4	5	6	7	

		Strongly disagree							Strongly agree
3.	When something is prohibited, I usually think "that's exactly what I am going to do."	1	2	3	4	5	6	7	

		Strongly disagree							Strongly agree
4.	I consider advice from others to be an intrusion.	1	2	3	4	5	6	7	

		Strongly disagree							Strongly agree
5.	I become frustrated when I am unable to make free and independent decisions.	1	2	3	4	5	6	7	

		Strongly disagree							Strongly agree
6.	It irritates me when someone points out things are obvious to me.	1	2	3	4	5	6	7	

		Strongly disagree							Strongly agree
7.	I become angry when my freedom of choice is restricted.	1	2	3	4	5	6	7	

Strongly   Strongly

8. Advice and recommendations induce me to do just the opposite.	disagree 1 2 3 4 5 6 7		agree
9. I resist the attempts of other to influence me.	Strongly disagree 1 2 3 4 5 6 7		Strongly agree
10. It makes me angry when another person is held up as a model for me to follow.	Strongly disagree 1 2 3 4 5 6 7		Strongly agree
11. When someone forces me to do something, I feel like doing the opposite.	Strongly disagree 1 2 3 4 5 6 7		Strongly agree

Manipulation check granola bars

	Not at all knowledgeable					Extremely knowledgeable
1. How knowledgeable do you rate yourself regarding granola bars?		1 2 3 4 5 6 7				

	Rarely					Often
2. How often do you buy granola bars?		1 2 3 4 5 6 7				

Which of the brands did you know before participating in this study?

☐ Wallabybar

☐ Eat natural

☐ Wallabybar and eat natural

☐ I did not know either one.

Manipulation check rooms

	Not at all					Very much
1. To what extent do you feel that the room is small?		1 2 3 4 5 6 7				

	Not at all					Very much
2. To what extent do you feel that the room is large?		1 2 3 4 5 6 7				

What do you think was the purpose of this study?

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Thank you for your participation!

Appendix 2 Questionnaire experiment 2

-please look at the information provided accurately.

-complete anonymity is guaranteed.

What is your gender?

- ☐ Male
- ☐ Female

What is your age?

……………………………………………………………………………………………………

What is your nationality?

- ☐ Dutch
- ☐ German
- ☐ Different: ……………………………………………………………………………………….

Which rosé do you prefer?

- ☐ Rosé Lavazzo
- ☐ Rosé Lavento

Perceived threat

	Strongly disagree						Strongly agree
1. It felt as if the student was trying to take away my freedom to form my opinion about the wine.	1	2	3	4	5	6	7

	Strongly disagree						Strongly agree
2. I considered advice from the student to be an intrusion.	1	2	3	4	5	6	7

	Strongly disagree						Strongly agree
3. In general, I resist the attempts of others to influence me.	1	2	3	4	5	6	7

	Strongly disagree						Strongly agree
4. Advice and recommendations usually induce me to do just the opposite.	1	2	3	4	5	6	7

Reflection current body state

		Not at all						Very much
1.	How free do you feel right now?	1	2	3	4	5	6	7

		Not at all						Very much
2.	How unrestricted do you feel right now?	1	2	3	4	5	6	7

		Not at all						Very much
3.	How open do you feel right now?	1	2	3	4	5	6	7

		Not at all						Very much
4.	How encumbered do you feel right now?	1	2	3	4	5	6	7

		Not at all						Very much
5.	How inhibited do you feel right now?	1	2	3	4	5	6	7

		Not at all						Very much
6.	How confined do you feel right now?	1	2	3	4	5	6	7

Perceived spaciousness

		Not spacious						spacious
1.	How spacious does this room seem to be?	1	2	3	4	5	6	7

		Enclosed						Open
2.	How open does this room seem to be?	1	2	3	4	5	6	7

Manipulation check rooms

		Not at all						Very much
1.	To what extent do you think that the room is small?	1	2	3	4	5	6	7

		Not at all						Very much
2.	To what extent do you think that the room is large?	1	2	3	4	5	6	7

What do you think the size of the room is (in m^2)?

Manipulation check wines

		Not at all knowledgeable		Extremely knowledgeable

1. How knowledgeable do you
   rate yourself regarding wines?

   1   2   3   4   5   6   7

		Rarely		Often

2. How often do you buy wines?

   1   2   3   4   5   6   7

What do you think was the purpose of this study?

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Thank you for your participation!