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The influence of one's personality on the effectiveness of persuasion principles

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Eindhoven, November 2015

The influence of one's personality on the effectiveness of persuasion principles.

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Abstract

Over the last few decades a lot of research investigated persuasion and persuasive technological systems. However, tailoring persuasive system behavior based on individual differences of users have hardly been researched. A salesman can in a physical store adapt their sales tactics to customer, however in a digital store this is harder to do. Persuasive systems (e.g. digital store) might employ persuasive messages, but we expected that different individuals will be more persuaded by some persuasive principles than others.

Previously, two approaches have tried to tailor persuasive messages. First, Kaptein and Eckles (2012) tailored persuasive messages based on previous successful persuasive interactions. They used the term persuasion profile for the estimated effectiveness of different persuasion strategies that worked before. Second, Hirsch, Kang and Bodenhausen (2015) tailored persuasive messages based on The Big Five personality traits. Based on earlier psychological research they framed persuasive messages based on personality traits.

In the current research, we propose a third, more fundamental, type of approach. We argue that people with certain personality traits might be more sensitive to certain persuasion principles. That is, we investigate whether certain persuasive principles (e.g., those proposed by Cialdini) might be more effective for influencing people who have certain scores on the Big Five personality traits. We argue that our approach is better suited than the persuasion profiling approach to adapt system behaviour to different situations. This is because persuasion profiles are based on previous successful persuasion attempts and ignore what worked for other, similar people in these situations. So if we can persuade better based on stable personality traits persuasion might become much more effective and consistent. We also note that the formulation adaption approach of Hirsch and colleagues (2015), is hard to translate to different persuasive messages.

In this study we investigate the relationship between The Big Five personality traits and Cialdini's (2012) six persuasion principle effectiveness. First, participants filled out the Big Five questionnaire. Second, participants were presented with 3 stores, in which the 6 principles were implemented, in which they had to evaluate products. Lastly, participants also completed the Susceptibility to Persuasion Scale (STPS).

Results showed that participants with high scores in the openness to experience or extraversion traits are more easily influenced by the social proof messages that were paired with product. Also, participants with high scores in the extraverts trait are more easily influenced by the reciprocity principle that was paired with product. Our finding is in line with previous research, which found that extraverts are sensitive to rewards and find social interaction rewarding. Furthermore, we expected people who are open to experiences see social proof as evidence that it could expand their horizon.

This study also investigated the relationship of one's personality on perceived susceptibility to persuasion principles. Results showed that several relations were found. Participants high in openness to experience were less convinced and people high in neuroticism stated that they were more convinced by the social proof argument. These findings however are not in line with our own findings that showed that participants high in openness to experience trait were more positive about the social proof persuasive principle when implemented with products. We expect this to be due to the presentation bias that people who are open to experiences don't want to seem to be influenced by social actors but still see the social proof messages that were implemented as evidence that they should have at least tried a product.

The current results also showed that participants high in conscientiousness were more convinced by the reciprocity principle and the commitment and consistency principle. We argue that these relations are caused by the realization that interpersonal relationships are needed to achieve their own goals. Furthermore, the people high in agreeableness also stated that they would be more susceptible to the commitment and consistency principle. This might be due to the nature of agreeable individuals to value interpersonal relationships. We want to argue that these persuasive principles would work better when an avatar is introduced in the persuasive system, since our persuasive message had no human element implementation in the message.

As shown, many relationships were found between personality traits and persuasive principal effectiveness and the expectation of persuasive principal effectiveness. In sum, this research showed that, even with a fairly small sample, we can predict how effective a persuasive principle will be based on an individual's personality. This research also argues to look at what persuasive messages worked for others in the same situation to tailor system behavior and not just at what worked for an individual before. However, more research is needed on how to tailor persuasive systems to individuals.

Keywords
Persuasion, personality, persuasive technology, personalization

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Chapter 1

Introduction

In a physical store a good salesman can see from the customers behavior what he/she might want and adapt his sales tactics accordingly. From the behavior of the customer the salesman could Figure out what products to promote and how to promote them. However, the sales tactics that worked for the physical salesman have not yet been translated to the digital salesman. The amount of people that can be reached with a digital shop increases exponentially, however the percentage of people who were persuaded to buy lags behind (Kaptein, 2012). Recently, research on Persuasive Technology has started investigating how technology might use influencing strategies, but how the digital salesman might adopt his sales tactics to particular individuals is largely undiscovered country.

Previously, two approaches to tailored persuasion have been investigated. Firstly, Kaptein and Eckles (2012) argued that while a persuasion principle (e.g., the principle of authority) might work for most people, persuasion principles do not influence everyone equally. They argued that by measuring what persuasion principle was effective for a user before, a persuasion profile could be constructed for a user, that can be used to adapt system behavior to that individual user. Kaptein and colleagues (2015) in a later experiment successfully adapted system behaviour based on these persuasion profiles. That is, they used a persuasive principle for a person, that had shown to be effective for that person earlier. They found that the fitted persuasion based on persuasion profiles performed better and kept working over a longer time span.

Secondly, Hirsch, Kang and Bodenhausen (2012) developed the approach of fitting persuasion to user personality traits. That is, they adapted the wording of five persuasive appeals to a users score on Big Five personality traits. The appeals used by Hirsch and colleagues were tailored based on previous psychological research. They found that the right formulation of the persuasive message for 4 personality traits out of 5 increased its effectiveness. So, different from Kaptein and colleagues (2015), Hirsch and colleagues (2012) did not select specific persuasive principles for specific users, but rather, their adaptations only focused on the fitting formulation of persuasive messages.

In the current research, we propose a third type of approach. We argue that people with certain personality traits might be more sensitive to certain persuasion principles. That is, we investigate whether certain persuasive principles (e.g., those proposed by Cialdini) might be more effective for influencing people who have certain scores on the Big Five personality traits. We argue that our approach is better suited than the persuasion profiling approach to adapt system behaviour to different situations. This is because persuasion profiles are based on previous successful persuasion attempts and ignore what worked for other, similar people in these situations. So if we can persuade better based on stable personality traits persuasion might become much more effective and consistent. We also note that the formulation adaption approach of Hirsch and colleagues (2012), is hard to translate to different persuasive messages.

Therefore, we argue that our approach has large potential to tailor persuasive messages and we need to investigate the link between persuasion principles and personality traits. Indeed, earlier research suggested that people with certain personality traits are affected more by certain persuasion principles (e.g., people high in agreeableness want to uphold positive relations with others and therefore might be susceptible to the commitment and consistency principle; Wiggins, 1991). However, direct evidence of the link between personality traits and persuasion principle effectiveness is missing.

Chapter 2

Literature review

2.1 Persuasive systems

Social psychologists started investigating persuasion during the second world war (Hovland, Lumsdaine, & Sheffield, 1949; Lewin, 1947; Stouffer, Suchman, DeVinney, Star & Williams, 1949). Successful persuasion entails that the receiver of a persuasive message changes his/her attitude according to the intent of the message. We are for instance influenced by others to be competent and have a correct view of our environment (White, 1959). Persuasion is part of human interaction but persuasion also plays a role in human-computer interaction (Fogg, 2002). A computer can, just like a human, influence you to change your attitudes or behavior. The term persuasive technology is used to describe a class of technologies that are designed to persuade. Humans are naturally good influencers because they can use the context and a person's behavior to tailor persuasion. Fogg argues that in the long run computers might become better persuaders than humans. It might happen because computers are always on, are more persistent, can hold more and more accurate information about the situation/person, allow for anonymous persuasion and can use many modalities (e.g. audio, visual, graphics and animations). However, persuasive technology in online stores currently is not as good as in the physical ones (Kaptein, 2012).

To understand how to persuade in an online store we first need to know how persuasion works. Many theories from psychology research have been developed to explain persuasion; Some of the most researched are Theory of Planned Behavior (TPB, Figure 2.1, Azjen, 1985, 1991) and the Elaboration Likelihood Model (Petty & Cacioppo, 1983). In the TPB a central factor is the individuals intention to perform a given behavior. If a persons own (internal) attitude is strong to perform a behavior he/she will be more likely to perform it. Secondly, subjective norms (what others think you should do) can influence what a person thinks the right intention should be in a given situation. Lastly, a person's perceived behavioral control implies that behavior is strongly influenced by their ability to perform it. However, the TPB does not specify how one might be able to personalize persuasion to individuals and is criticised for being to description. Making it hard to use in building new persuasive messages.

Another theory that helps us understand how a store clerk might be able to influence consumers is the Elaboration Likelihood Model (ELM, Figure 2.2) by Petty, Cacioppo and Schumann (1983). The ELM argues that persuasion can happen via one of two routes. The first route is the central route to persuasion, in which the receiver has both the motivation and ability to actively process a persuasive message. This implies that the arguments are carefully considered, they also argue that this route can create an enduring attitudes change. The second route is the peripheral route, in which the arguments are not actively processed. When either the motivation or ability to process is absent the ELM states that the persuasive message will be judged by persuasion cues. An example of such a cue is the amount of arguments that are made in persuasive message or how

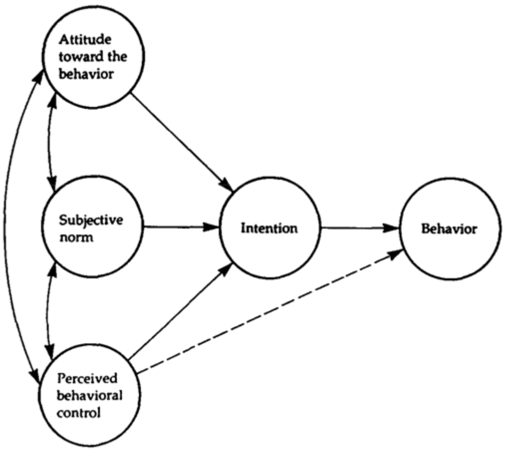

Attitude toward the behavior
Subjective norm
Perceived behavioral control
Intention
Behavior

Figure 2.1: Theory of Planned Behavior (p. 182, Ajzen, 1991).

good looking the persuader is. The ELM has shown to explain a moderating effect on persuasion. Since the development of this theory some conceptions have changed. Researchers now argue that the two routes are extremes and the reality is more like a continuum, and both routes can work conjoint (Petty et al. 1997). Showing that persuasive messages need optimize the message for both routes.

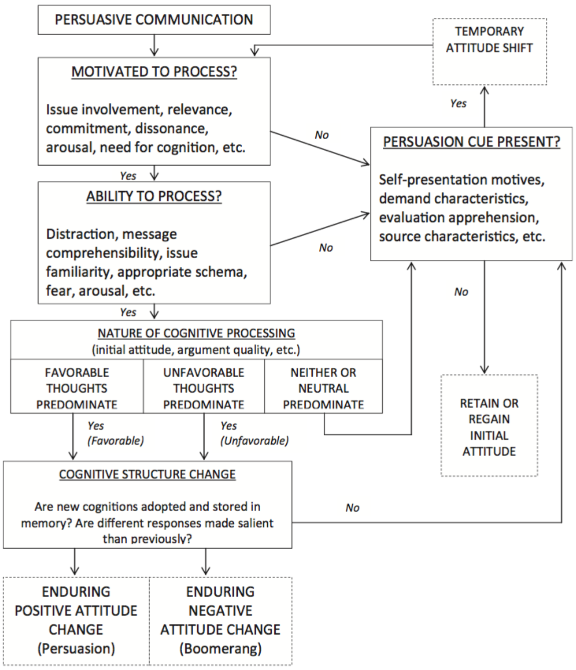

PERSUASIVE COMMUNICATION
MOTIVATED TO PROCESS?
Issue involvement, relevance, commitment, dissonance, arousal, need for cognition, etc.
Yes
ABILITY TO PROCESS?
Distraction, message comprehensibility, issue familiarity, appropriate schema, fear, arousal, etc.
Yes
NATURE OF COGNITIVE PROCESSING
(initial attitude, argument quality, etc.)
FAVORABLE THOUGHTS PREDOMINATE
UNFAVORABLE THOUGHTS PREDOMINATE
NEITHER OR NEUTRAL PREDOMINATE
Yes (Favorable)
Yes (Unfavorable)
COGNITIVE STRUCTURE CHANGE
Are new cognitions adopted and stored in memory? Are different responses made salient than previously?
ENDURING POSITIVE ATTITUDE CHANGE (Persuasion)
ENDURING NEGATIVE ATTITUDE CHANGE (Boomerang)
TEMPORARY ATTITUDE SHIFT
Yes
PERSUASION CUE PRESENT?
Self-presentation motives, demand characteristics, evaluation apprehension, source characteristics, etc.
No
No
No
No
RETAIN OR REGAIN INITIAL ATTITUDE

Figure 2.2: The elaboration likelihood model (p. 6, Petty & Cacioppo, 1983).

2.2 Persuasive principles

As noted, how persuasion works has been heavily research by psychologists over the last decades. These theories like the Theory of Planned Behavior and the Elaboration Likelihood Model can give an expectation to why persuasion is successful or not. However these theories are descriptive and more specific strategies are needed increase the effectiveness of persuasive messages in online stores. The term persuasive principles is used to describe a successful mechanisms which can be used to influence people. These principles are more concrete and show actual implementations. Most of these principles focus on compliance gaining and in reference to the Elaboration Likelihood Model mainly work in the peripheral route of processing. Many researchers have made divisions of these principles with a varying degree of granularity. Kellermann and Cole (1994) developed 64 principles, Fogg (2002) developed over 40 different strategies and Cialdini (2012) created 6 influence principles. These taxonomies are inherently not based on theory (O'Keefe 1994). However, grouping persuasion strategies helps to give designers an expectation of the effect. Cialdini developed 6 influence principles based on years of observing successful salesmen/women at work. Cialdinis division is fairly straightforward and general in that it covers many different persuasion approaches. Also the limited number of Cialdinis principles makes them viable for further research as was also argued by Kaptein and Eckels (2012). The 6 influence principles developed by Cialdini will be discussed next.

Liking

The first influence principle developed by Cialdini (2012) is the liking principle. The liking principle states that when a persuader is good looking or known to the receiver this increases persuasion. Cialdini argues that there are three aspects to this principle. First, we inherently like a person that is physically attractive (Olson & Marshuetz, 2005). Second, we are more strongly persuaded by people who are or look similar. Similar people are expected to hold the same values and norms. Similarity does not have to be specifically mentioned, researchers even found that when people dressed similarly they were more persuasive (Emswiller, Deaux & Willits, 1971). Third, we make associations when something good or bad happens when a person is close to it. Manis, Cornell & Moore (1974) showed that a bearer of bad news will be disliked for it. Implementing the liking principle in a digital shopping experience can be more straightforward for some product categories than others. When a store is selling clothing it seems implied that a good looking person wears the attire. However, some persuasive messages would be served by showing the similarities between the persuader and the receiver (e.g. when selling dishwasher soap). How the liking principle is implemented therefore depends on the context and the product that is being sold.

Reciprocation

The second influence principle described by Cialdini is the reciprocation principle. This principle tells us that we should repay in kind (Kunz & Woolcott, 1976). Reciprocation can be used without it being invited and the person receiving generally feels the need to unburden his/her self of the debt (Paese & Gilin, 2000). What is exchanged reciprocally is willingness to provide what the others need (Clark, Mills & Corcoran, 1989). There is a genuine distaste for a person who does not conform to the reciprocation rule (Wedekind & Milinski, 2000). This rule is quite powerful and overpowers other factors in the persuasion process (Regan, 1971). In Regans experiment an accomplice offering participants a free coke before asking to buy raffle tickets increased his sales rates drastically. Regan also investigated if liking the accomplice was part of the exchange. He found that how much the participant liked the accomplice had an effect when reciprocation was not used. However, when the free gift was introduced the liking principle was no longer of influence. Such an exchange can be of unequal value, the conspirator in Regans experiment had a 500% return in investment. The reciprocation strategy promotes action as a response to the persuaders action. To translate this to a digital shopping experience many stores have opted to give a few euros discount without the customer asking for it in return for a minimum order size. However, this translation often lacks the human element and the general distaste for a person who does not conform (Mills & Corcoran, 1989) is expected to be less feared by customers due to the anonymity.

Commitment and consistency
The third influence principle described by Cialdini is the commitment and consistency principle. The commitment and consistency principle is based on theories of cognitive dissonance theories (Festinger, 1957). This theory states that when evidence is given that contradicts one's views discomfort is experienced to motivate a change of these views. For example, in an experiment done by Freedman and Fraser (1966) participants were asked to place a small sign that read Keep California beautiful on their lawn. Almost everyone allowed this, the message was in line with their own views and it was pretty much unobtrusive. Two weeks later the experimenters requested to place a drive careful billboard. Almost half of the participants agreed even though the initial commitment was for a different cause. When no first request was made, only few people allowed the big billboard.

How long a change in beliefs holds is determined by if it was a person's own internal choice or an external factor (e.g. due to an undesired consequence). In an experiment by Freedman (1965), children were asked to not play with a toy or risk punishment. Alternatively they just asked the children just not to play with the toy, without the punishment consequence. They found that the children at risk of punishment only complied right after threat of punishment. After a few weeks the children had the punishment threat removed and the availability to play with the toy and others. The children that were told the initial threat played the most with the toy. Freedman argued the other children did not play with the toy in accordance to cognitive dissonance theory and made arguments internal why not to play with the toy.

Social proof
The fourth influence principle described by Cialdini is the social proof principle. That is, we look at what others think to determine what is correct (Lun et al, 2007). In an experiment by Bandura, Grusec and Menlove (1967) the social proof principle was implemented to show that people learn from others. In their experiment children who were afraid of dogs watched a movie of a child playing with a dog for 20 minutes a day. After only four days 67 percent of the children were willing to play with a dog, which shows that the social proof principle can be very effective.

The social proof principle is strongest under uncertainty (Sechrist & Stangor, 2007). When we do not know what to do we mimic or learn from others. Just like in the liking principle when similarity (personal dispositions, context or actions) is high we are more inclined to follow the others lead (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990; Parks, Sanna and Berel 2001).

Authority
The fifth influence principle described by Cialdini is the authority principle. Authority Figures are expected to hold a greater knowledge on a topic and we respond to the symbols of authority rather than the content of the argument. In an experiment Milgram (1974) tested the influence of authority. It involved a fake shock machine in one room and a conspirator in another room with an audio connection. The participant was asked by the experiment guide to give shocks when the conspirator answered wrongly. There were two conditions: the experiment guide wore a lab coat or not. The guide kept asking to increase the voltage at a wrong answer and the participant could hear the conspirator scream clearly after a few shocks. This experiment showed that many of the participants (around 65%) dealt fatal voltages when they were asked by the person in the lab coat. Happily, the shock machine was not hooked up and the conspirator was just an actor, but his experiment did show the power an authority Figure holds.

Scarcity
The sixth influence principle described by Cialdini is the scarcity principle. This principle is linked to our tendency to avoid loss. In gambling experiments we clearly avoid losses even if these bets are of equal value (Hobfoll, 2001). Especially under risk and uncertainty we tend to avoid loss (Tversky & Kahneman, 1981). This principle works because we assign more value to items that

are in short supply (Lynn, 1989).

Research suggests that there are two aspects that can increase the effectivity of the scarcity principle. First, things that recently became inaccessible are more desirable. This can be explained with the theory of psychological reactance (Brehm, 1966). Whenever a free choice is limited or threatened the need to retain it makes these freedoms more valued. Secondly, another moment where scarcity is more effective is when there is competition for a resource (Worchel, Lee & Adewole, 1975). When we are faced with direct rivalry for a good it becomes more valuable.

2.3 Individual differences and persuasion

Persuasive principles can be used to increase the effectiveness of a message. However, who is receiving the message also plays a role in how effective it will be. Not everyone is convinced equally by a message. Interpersonal differences have been shown to affect persuasion. For example, Haugtvedt and Petty (1992) investigated if people can have different needs for cognition. Their experiment first gave participants a message stating that a food additive was unsafe. Right after the first message participants were presented with a counter message. People high in need for cognition were more resistant to the counter. This shows that a persons individual difference can mediate the effectiveness of a persuasive message. But before we dive into how interpersonal differences affect persuasion, we need to know what information a persuasive system can gather on personality.

There are two logical types of data we can collect from a person, explicit and implicit. Explicit data from a person involves self-reporting on behavior or traits. Implicit data that can be gathered means that an individual is not specifically aware of being monitored. An example would be that a webshop logs a customer's purchasing behavior. According to Kaptein and colleagues (2015) persuasion profiles could also be seen as implicit measures of personality, describing a susceptibility to the persuasion principle that is employed in a persuasive message.

There are several aspect of ones personality that are open to change. A person's domain knowledge, attitudes, norms and current values can change over time. For example by learning more about a certain product domain. This could lead to a different response to a persuasive message because they are more involved and knowledgeable about a product. The focus in this research is on individual difference that are stable over different situations. Therefore, We want to focus on what these personality traits tell about the effectiveness of certain persuasion principles.

Personality traits
Individual differences in personality have been explicitly measured with the Big Five (Goldberg, 1990; McCrae & John, 1992; John, Naumann, Soto, 2008). The Big Five is based on an analysis of natural language people use to describe themselves and others. The Big Five is based on the assumption that relevant and salient personality traits are encoded in language (John, Naumann, Soto, 2008). The measurement instruments developed based on the Big Five ask the participant to fill in a 5-point Likert scale asking if something applies to them. The Big Five factors have been developed to explain fundamental traits of human personality. The big five factors have been renamed several times. The latest works use these labels: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to experience. John and colleagues (see Table 2.1) reviewed the Big Five variables providing an overview of the concepts.

Table 2.1: The OCEAN' of Personality Definition and Explication of the Big Five Domains (p. 120, John et al., 2008).

Verbal factor labels	Extraversion Energy Enthusiasm	Agreeableness Altruism Affection	Conscientiousness Constraint Control of impulse	Neuroticism Negative Emotionality Nervousness	Openness Originality Open-Mindedness
Conceptual definition	Implies an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality.	Contrasts a prosocial and communal orientation toward others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty.	Describes socially prescribed impulse control that facilitates task- and goal- directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks.	Contrasts emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense.	Describes the breadth, depth, originality, and complexity of an individual's mental and experiential life.
Behavioral examples	Approach strangers at a party and introduce myself; Take the lead in organizing a project; Keep quiet when I disagree with others (R)	Emphasize the good qualities of other people when I talk about them; Lend things to people I know (e.g., class notes, books, milk); Console a friend who is upset	Arrive early or on time for appointments; Study hard in order to get the highest grade in class; Double-check a term paper for typing and spelling errors; Let dirty dishes stack up for more than one day (R)	Accept the good and the bad in my life without complaining or bragging (R); Get upset when somebody is angry with me; Take it easy and relax (R)	Take the time to learn something simply for the joy of learning; Watch documentaries or educational TV; Come up with novel set- ups for my living space; Look for stimulating activities that break up my routine

The Big Five taxonomy is a common, operational framework to describe personality (John et al., 2008). The Big Five has been tested many times and is generalizable in that it holds across different samples and implementations (John and Srivastava, 1999). This measurement tool is also subjected to the self report bias of ones personality. The effect of ones personality on the persuasion principles however has not been researched directly. Therefore we will shortly review the Big Five personality traits and connect them to the persuasion principles based on our own insights and previous research.

Openness to experience

The openness to experience factor is related to intellect and the ability to learn and reason. But beside the intellect factor Lonky, Kause and Rodin (1984) argue that it is the willingness to pursue questions that lead to mental development. McCrae and Costa (1997) describe individuals that are artistic and investigative interests, based on the items involved. Gerber and colleagues (2013) found that people high in openness to experience were more susceptible towards voting when confronted with a social proof argument. In their persuasive message participants were pointed out that others can find out if you voted and the researchers suggested that not voting might lead to social embarrassment. Gerber and colleagues found that people high in openness to experience where most easily convinced to vote (out of the five personality traits), this might be due to the social norm that voting is the correct thing to do. Therefore we would expect that the social principle would work best for this group.

Agreeableness
The agreeableness factor is related to interpersonal relations (Graziano & Eisenberg, 1997). Hogan (1983) argued that agreeableness stems from the need for human groups to work together. Wiggins (1991) suggested that the individual differences in agreeableness might be a motivational system in which people strive for intimacy, union and solidarity with the groups they belong too. More specifically, agreeableness factor describes individual differences in the motivation to maintain positive relations with others. We would argue that people high in agreeableness would be susceptible to the commitment and consistency principle and reciprocity principle since they want to uphold positive relations.

Conscientiousness
People high in conscientiousness are described by John and colleagues (2008) as people high in impulse control that facilitate task and goal directed behavior. Roberts, Chernyshenko, Stark and Goldberg (2005) analysed within the major personality inventories what described a conscientious individuals best. They found that the factors for industriousness, order, self-control, responsibility, traditionalism and virtue where most descriptive of the trait. However, they did not focus on what this might mean for persuasion. Hogan and Ones (1997) argued that conscientious people are especially committed to the authority; They argue that conscientious people value social hierarchy and strive to climb this hierarchy. Therefore we would expect the same to hold true with the authority persuasion principle described by Cialdini.

Extraversion
Extraversion or positive emotionality as described by Watson and Clark (1997) argued that there are six facets in the extraversion factor of the Big Five: venturesome (feelings of excitement seeking and desire for change), affiliation (feelings of warmth and gregariousness), positive affectivity (feelings of joy and enthusiasm), energy (feeling lively and active), ascendance (feeling dominant or being an exhibitionist), and ambition (valuing achievement and endurance)(p. 453, Lucas et al., 2000). In regards to persuasion Lucas and colleagues (2000) found that extraversion describes ones internal sensitivity to rewards. In a paper about Get-Out-The-Vote (GOTV) appeals Gerber and colleagues (2013) tested a persuasive message employing social pressure, this had a negative effect on extraverts. Based on Lucas and colleagues description we argue that the reason for this is that extraverts are less influenced by other social actors as they are seen as the dominant influencer. Therefore we would expect Cialdinis social principle to work counterproductive.

Neuroticism
According to John and colleagues (2008) neuroticism describes a person's emotional stability. They also argue that people high in this factor are more likely to avoid conflicts. Carver, Sutton and Scheier (2000) argue that in goal orientated behavior there are two distinct processes. One orientated towards positive goals and one away from undesired goals. They summarized several research papers to show that different brain regions are activated for the one or the other process. The two processes are different in that the positive goal is approach orientated. The undesired goal process is avoidance orientated. The distinction they make is that the avoidance orientated process just moves away from the undesired goal and not toward the desired opposite of this goal (see Figure 2.3). Carver, Sutton and Scheier then also looked at which personality characteristic might explain an susceptibility to approach or avoidance. To this extent Hirsh and Inzlicht (2008) measured the brain's responses to negative feedback and found that people high in neuroticism

respond more to negative feedback. In regards to six persuasive strategies mentioned by Cialdini we could argue that neurotic individuals want to avoid commitment or possible consistency questions. Therefore, we would argue that this principle and the reciprocation principle should be less effective.

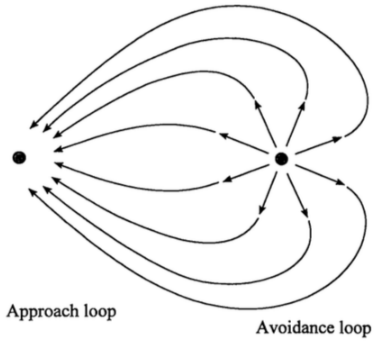


Figure 2.3: The effects of discrepancy-enlarging feedback systems (Carver & Scheier, 1998).

2.4 Personalizing persuasion

Personalization of persuasion implies that we adapt system behavior to individual needs. Previous research done in marketing showed that adapting a product to customer segments and the situation is the smart thing to do (Dickson, 1982). However, marketing research generally does not take individual differences into the mix. Taking a user's segment to account is one thing, however as Fogg (2002) argues as technology advances more information about the user might be used to personalize the persuasive messages. As described in the introduction two methods have been tried before to personalize persuasion. We will go into detail on how these two methods were implemented before to give a better overview on how they work.

First, Kaptein and colleagues (2015) in their first experiment focused on reducing snacking behavior by adapting the persuasive message that were send via SMS. They adapted which persuasion principles was used based on what was effective before (persuasion profiling). In this experiment they started by employing the Susceptibility to Persuasion Scale (Kaptein, Ruyter, Markopoulos and Aarts, 2012) to adapt the first persuasive messages. This explicit measurement poses questions like Whenever I commit to an appointment I always follow through. to measure if the commitment principle would work on that person. Then adaptation was based on a Thompson sampling algorithm (Scott, 2010). That means, they first calculated the success chance of every principle and then did a random draw with every principle weighted accordingly. That is, every persuasion principle could still be selected but just with a weighted probability. Then if a message was successful they adapted the next message with a higher probability for the persuasion that was in the message. Their adaptation conditions was better at convinced users to snack less compared to a random selection of the persuasive messages. In their second experiment they also investigated a different context. In their third experiment they did a large scale experiment with just the implicit measurements of which persuasive message was effective before. With their experiments they showed that a persuasive system can learn from failed or succeeded persuasion attempts and adapt a system's behavior on this data. Kaptein and colleagues also showed that these messages stay effective over a longer time span when tailored to the individual.

Second, Hirsch, Kang and Bodenhausen (2012) argued that based on the Big Five personality traits (Goldberg, 1990) persuasive messages could be formulated better. So they created 5 tailored messages, based on previous research, and measured how well they were received. They argued that extraverts are especially sensitive to rewards and experience social situations as more rewarding (Lucas et al., 2000), agreeable individuals value communal goals and interpersonal harmony (Graziano & Eisenberg, 1997), conscientious individuals value achievement, order and efficiency (Roberts, Chernyshenko, Stark & Goldberg, 2005), neurotic individuals are especially sensitive to threats and uncertainty (Carver, Sutton, & Scheier, 2000; Hirsh & Inzlicht, 2008), and open individuals value creativity, innovation, and intellectual stimulation (McCrae & Costa, 1997). With 322 participants they found that matching the phrasing of a persuasive appeal with a person's personality traits increase the effectiveness; This was the case for the factors extraversion, agreeableness, conscientiousness, openness/intellect but not for the neuroticism factor. Showing that when a person's personality is known an advertisement can be framed in a more persuasive manner. Making new messages based on their findings however might prove difficult, since this has not been tested in different scenarios or with different products. Also, they only changed the wording of the persuasive messages which makes it hard to use these findings in other persuasive messages.

Personalization based on what worked for others

Kaptein and colleagues (2015) focussed on personalizing persuasion based on what messages succeeded before, for an individual, but did not focus on what worked for others. Another form of personalization that incorporates knowledge about other user in a persuasive message is a recommender systems. These systems look at user to user and product to product similarities to predict which item one might also be interested in based on the users input. For example, a movie recommender tasked with predicting which movie one might also like needs users to rate movies. The ratings a user provides on a movie show the preferences of that user on the movie that is rated. These movies are also rated by other users and all these ratings together say something about the movies and who likes them. A recommender system can, based on these ratings, calculate similarities between movies and users. The current research of recommender systems does not look at how a persuasive principle would affect a recommendation. For example, a recommender system finds the a recommended movie based on what you liked before. This recommendation can be joined with a persuasive message like This movie won 5 Emmys in 2013 which might influence how good the recommendation is.

Before a recommender system can make a prediction on what someone might also like they need to know their preferences. Kaptein and colleagues (2015) measure these preferences when a persuasive messages failed or succeeded. As with their research they could only started to adapt system behavior when these preferences were known; the same holds true for a recommender system. However, besides that a recommender system needs to learn about a user before it can recommend it also needs knowledge about the other users. In recommender system literature this is called the cold start problem. This is the moment that the system lacks information about users and their preferences. In this stage a recommender system cannot look at other users to see what the current user might also appreciate since there is no other user in the system. To overcome this users have to give their preferences as stated before. Then when enough data is collected the recommender system can start to predict.

Several different algorithms have been researched in the past with recommender systems. Koren and Bell (2011) give an overview of the most successful practices. Matrix factorisation (Koren, Bell and Volinsky, 2009) is one of the most successful methods. It uses a realisation of a latent feature model, combining the rating pattern by users into vectors. These latent features say something about a user and also about the items that are rated by the users. In these latent features similar items or users are close together. So for example, if two users rate the same movie the same they will be close together on these latent features. They will probably also have similar taste in movies and get similar movies recommended.

Chapter 3

Research objectives

In our research we will first search for a psychological basis to predict the connection between a personality trait and persuasion tactic. An example of such a connection can be found in research done by Hogan and Ones (1997), who reviewed the Conscientiousness construct found that people high in this trait are especially committed to the norms of authority. When we look at the 6 persuasion principles we want to argue that the authority principle should therefore also be effective on people high in this trait. However we do realise that one personality trait will probably not explain all of the variance in persuasion. This first part of the research leads to the following research question:

Research question 1: What is the relationship between a users personality traits and the effectiveness of specific persuasion principles? Based on previous research we already discussed some expectations between personality traits and the persuasive principle effectiveness. This part of the research is quite exploratory and our expectations can be formulated in these six hypotheses:

> **Hypothesis 1a**. We expect to find a (negative) correlation between a users score on the personality trait of neuroticism and that users evaluation of a product that was promoted using the persuasion principle of reciprocity.
> **Hypothesis 1b**. We expect to find a (negative) correlation between a users score on the personality trait of extraversion and that users evaluation of a product that was promoted using the persuasion principle of social proof.
> **Hypothesis 1c**. We expect to find a (positive) correlation between a users score on the personality trait of openness to experience and that users evaluation of a product that was promoted using the persuasion principle of social proof.
> **Hypothesis 1d**. We expect to find a (positive) correlation between a users score on the personality trait of agreeableness and that users evaluation of a product that was promoted using the persuasion principle of commitment and consistency.
> **Hypothesis 1e**. We expect to find a (positive) correlation between a users score on the personality trait of agreeableness and that users evaluation of a product that was promoted using the persuasion principle of reciprocity.
> **Hypothesis 1f**. We expect to find a (positive) correlation between a users score on the personality trait of conscientiousness and that users evaluation of a product that was promoted using the persuasion principle of authority.

One might realize that the liking and the scarcity principle is not mentioned in the above sub questions. We have little expectations based on previous research for these principles. However we would argue to still measuring these principles to provide a picture for all the persuasion principles as done by Kaptein and Eckles (2012) and to stimulate further research inquiries.

The second part of this research focuses on improving personalization tactics for persuasion. We want to research if a persuasion principles can be selected based on what successfully influenced other users. To do this we propose to employ a matrix factorisation algorithm that looks for similarities between users to identify the right strategy.

> **Research question 2**: Which approach can select the most effective persuasion principles (over different situations): selecting persuasion principles based on a persuasion profile, or selecting persuasion principles based on what successfully influenced other user, similar in personality?
> **Hypothesis 2**. We expect that based on what successfully influenced other users (similar in personality scores) we can select more effective persuasion principles (over different situations) than based on a users persuasion profile.

We expect that users that are similar (in regards to personality) will predict persuasion better than just looking at what worked before. This is because every persuasion attempt differs on the basis of product, message and situation. So when there is still no information available about a person no prediction can be made on which persuasion principle is most effective. Only when the first and second attempt have been done the persuasion profile contains knowledge on what influenced a person. This is not the case when we first measure the personality traits. We can then already look at similar users to see what worked for them. We note however that this does require knowledge gathering before the first persuasion attempt.

Furthermore we expect that the persuasion profiling might become more accurate over time compared to just looking at similar users. The more knowledge is available about the user the better a prediction usually gets. So, especially in the beginning we expect the persuasion profiles to be unstable while the personality traits are not because of this lack of data. However, this is especially important for persuasive systems because usually in the beginning these persuasive message need to work. For example if we look at a ecommerce, if the first few persuasive messages do not succeed the customer has usually already left the site unsatisfied without buying anything. But if we knew a person's personality or at least have knowledge about other people who have been in this situation then we can start to improve the persuasive system.

Chapter 4

Methods

Design
To test our hypothesis, we will assess relations between a users score on a personality trait and that users evaluation of a product that was promoted using a specific persuasion principle. In this correlational study we used a repeated measures design to test persuasive message effectiveness, in which every participants was tasked with evaluation many products with the persuasion principles implemented. We also employed the STPS as used by Kaptein and collegues (2015) as a subjective measure of how well persuasive messages might work.

Participants
Participants were 95 recruited with use of the HTI participant pool (Eindhoven University of Technology). A total of 47 men and 48 women participated in the study. The selection criteria older than 18 and younger than 35 was used for this experiment. We selected this age group because they are familiar with online shopping. Participants were compensated for their time (4 euro for an estimated 20 min). Participants completed the study via an online survey system.

Procedure
The invitation for this study posed that participants were going to evaluate products and had to answer some questions about their personality. Participants were first asked to sign an informed consent notice. Then, the participants were instructed to complete the 44 Likert scale items of the Big Five Inventory (BFI, John, Donahue and Kentle, 1991, see Appendix A) which measures the personality of the participants. This is well validated measurement for the Big Five personality traits. An example question would be Remains calm in tense situations which is a reverse measurement for the neuroticism personality trait.

Next, participants were presented with an explanation about the next part of the research. Sequentially, they were presented with seven web pages with a book, an image, the title and a short description and five questionnaire items. The books were selected from Amazon.com and fell in the same price range (11-15), were of the Science Fiction & Fantasy genre, all had 4-5 stars and none were best sellers. The descriptions were adapted to be of almost equal length and any influence tactics already employed were removed from the description or images.

Each book was accompanied with a reason why it was selected, which appeared just below the book title (see Figure 4.1). These reasons employed Cialdinis six influence principles and also a control. All six of Cialdinis principles to be able to compare the persuasion profiles (Kaptein et al., 2015) to personalization based on a person's personality during the analysis (hypothesis 2). These messages implemented the authority, social proof, reciprocity, commitment and consistency, liking and scarcity principles (see Table 4.1).

Table 4.1: Influence principles applied to books (1), whiskys (2),stereo sets (3).

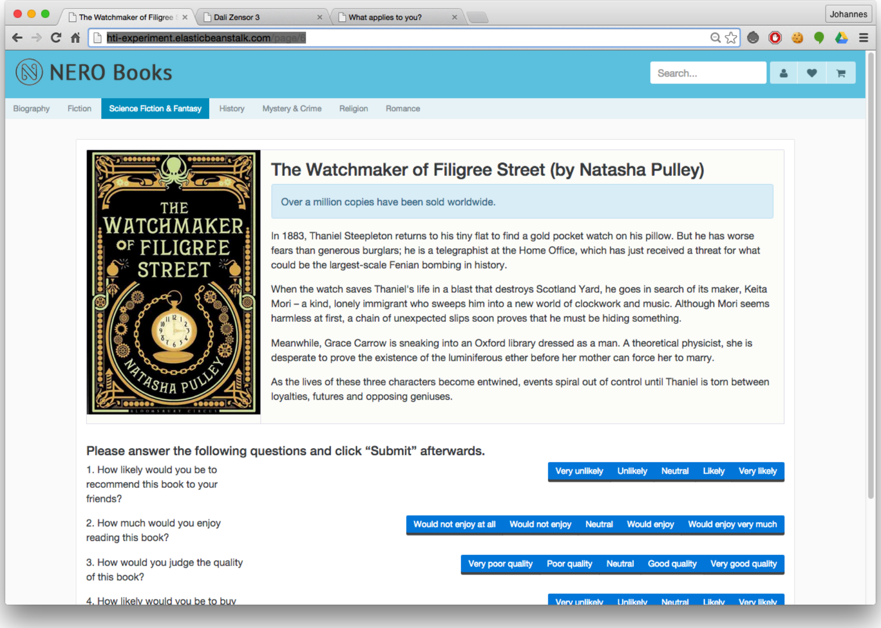
Persuasive principle	Implementation
Control	1. This book is randomly selected from our product offerings. 2. This whiskey is randomly selected from our product offerings. 3. This stereo is randomly selected from our product offerings
Scarcity	1. This book is a limited edition and signed by the author. Availability is limited. 2. This whiskey is almost sold out. There are only a few bottle left for purchase from this distillery. 3. The manufacturer is not able to keep up with demand, there are only 3 more units for sale.
Consensus	1. Over a million copies have been sold worldwide. 2. This whiskey was most popular in your region. 3. This our most sold stereo system.
Authority	1. Based on the Experts Book Exchange Top 20, this book is among the most talked about in the past year. 2. Recommended by whiskey expert Heather Greene. This bottle is her top pick for this autumn. 3. Voted best stereo system in its category by the dutch consumer association.
Reciprocity	1. If you purchase this book you will receive a 5 euros cash back from the publisher. 2. For every bottle sold we will donate 5 euros to the World Wildlife Fund. 3. Your will receive a 40 euros cash back voucher on this product.
Liking	1. This book is a best seller among other customers like you. 2. In a personal testing sample among students this whiskey was rated a top favorite. 3. Other participants in this study chose this stereo system as their favorite.
Commitment and consistency	1. On the basis of your previous evaluations you should also like this book. 2. Based on your previous answers you should also appreciate this whiskey. 3. Previous answers tell us that this stereo system is the best the fit.

When the first seven books were evaluated the participants went through the same process for two other shopping experiences. The reason for three different shopping experiences is to be able to compare Kaptein and colleagues (2015) persuasion profiles to personalisation based on personality in different situations. We used different product categories to simulate different situations in which persuasion can be used. The second store offered seven whiskeys and the other seven stereos, the information about the whisky was gathered from Underthelabel.com and where from Scotland, fell in the same price category (20-50) and had about the same amount of views on the site. The seven audio speaker sets were selected from the review site Tweakers.net and had about the same rating, where of the same bookshelf caliber with only two speakers in the set. We adapted the specifications of the speaker sets to appear very similarly in quality. These products like the books were also implemented with the persuasive principles employed as with the books (see Table 4.1 and appendix B). Participants were randomly assigned to different order of the persuasive principles. However the product order was kept consistent to control for differences in the product appeal.

Lastly, to measure which persuasion principle works best we also employed the Susceptibility to Persuasion Scale (STPS, Kaptein et al., 2012, see appendix C). This 26 item long questionnaire asked participants if they thought a statement applied to them. An example would be the question When I am in a new situation I look at others to see what I should do. to measure how the social proof principle might affect participants.

Measures

The first part of the research uses the Big Five Inventory (BFI) as developed by John, Donahue and Kentle (1991, also see John et al., 2008). The Big Five can be measured more accurately with bigger questionnaires like NEO-PI-R (Costa & McCrae, 1992, 240-items). However we ex-


The Watchmaker of Filigree
Dali Zensor 3
What applies to you?
Johannes
hti-experiment.elasticbeanstalk.com/page/6
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
THE WATCHMAKER OF FILIGREE STREET
NATASHA PULLEY
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely

The Watchmaker of Filigree Street (by Natasha Pulley)

Over a million copies have been sold worldwide.

In 1883, Thaniel Steepleton returns to his tiny flat to find a gold pocket watch on his pillow. But he has worse fears than generous burglars; he is a telegraphist at the Home Office, which has just received a threat for what could be the largest-scale Fenian bombing in history.

When the watch saves Thaniel's life in a blast that destroys Scotland Yard, he goes in search of its maker, Keita Mori – a kind, lonely immigrant who sweeps him into a new world of clockwork and music. Although Mori seems harmless at first, a chain of unexpected slips soon proves that he must be hiding something.

Meanwhile, Grace Carrow is sneaking into an Oxford library dressed as a man. A theoretical physicist, she is desperate to prove the existence of the luminiferous ether before her mother can force her to marry.

As the lives of these three characters become entwined, events spiral out of control until Thaniel is torn between loyalties, futures and opposing geniuses.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this book to your friends?

2. How much would you enjoy reading this book?

3. How would you judge the quality of this book?

4. How likely would you be to buy

Figure 4.1: Appearance of the bookstore with the social proof principle is implemented(blue box). The evaluation questions can be found below the book description.

pect the NEO-PI-R to be a strain on our participants. The BFI questionnaire is a 44 item long questionnaire with a 5-point Likert scale to indicate if a concept applies to your personality. The full questionnaire can be found in appendix A. The personality traits extraversion, conscientiousness, neuroticism, openness to experience all scored above the advised $\alpha >$ .7 in the reliability test. Except for the personality trait agreeableness ($\alpha =$,62), however this study has a relative small sample size which affect these statistics. For the analysis the scores were computed using John and colleagues (2008) instructions (see the Appendix A).

Secondly, to measure how well products were received the participant were asked receives 4 questions (completely cf. Kaptein and Eckles 2012) to subjectively evaluate the products (see Table 4). Also a question was added to see if they knew the product, this might be an influence on their judgment.

Table 4.2: Evaluations questions paired with the book product (based on Kaptein et al., 2015).

1. How likely would you be to recommend this book to your friends? (Very unlikelyVery likely)
2. How much would you enjoy reading this book? (Would not enjoy at allWould enjoy very much)
3. How would you judge the quality of this book? (Very poor qualityVery good quality)
4. How likely would you be to buy this book if you were going to buy a book? (Very unlikelyVery likely)
5. Have you read this book? (Yes-No)

Lastly, the Susceptibility to Persuasion Scale (STPS) by Kaptein and colleagues (2012) was used. This questionnaire has not yet been validated thoroughly but it is the only measure of Susceptibility to Persuasion for the Cialdini six currently available. This questionnaire was placed last to prevent participants from becoming overly aware of what was adapted in the product evaluations. The reliability for the STPS was also tested for the six persuasive principles: reciprocity principle (α = .68), scarcity principle (α = .650), authority principle (α = .6), commitment and consistency principle (α =.63), social proof principle (α = .5), liking principle (α = .36). Again this study has a relative small sample size, but the liking principle was removed for further evaluations due to its poor internal consistency.

Chapter 5

Results

Demographics
No significance was found for the demographics age and gender. A total of 94 participants completed the experiment. Of which 48 participants were female and 47 were male. The mean age was 22.5 years old which clearly shows that the respondance were for the most part students with some exceptions.

Relations between the big five personality traits and the persuasive principles based on theory
In order to investigate the 6 hypotheses that were stated based on our previous expectations (hypothesis 1a-1f), two sets of data were investigated. First, a repeated measures analysis was conducted which investigated if the personality trait covaried with the three reciprocity persuasive messages. A significant covariate would implicate that a personality trait can explain the variance of the persuasive principle effectiveness. Before we could run a repeated measures analysis the participants provided evaluations of the products but to select the persuasive message effectiveness first the variance of the control message for the product was subtracted. Secondly, we investigated if a personality trait correlated with the persuasive principle subscale in the Susceptibility to Persuasion Scale (STPS). A significant correlation would implicate that a personality trait items and the STPS items have common variance.

Hypothesis 1a expected a negative correlation between the neuroticism personality trait and the persuasion principle of reciprocity. First, a repeated measures analysis was employed to investigate if the neuroticism trait was a covariate for the three reciprocity persuasive messages that were joined with the three product categories. Results provided no evidence in support for H1a. Second, a regression was conducted with the neuroticism personality trait as an independent variable and the reciprocity principle subscale (STPS) as the dependant variable. Results provided no evidence to support H1a. We conclude that hypothesis 1a was not supported.

Hypothesis 1b expected a negative correlation between the extraversion personality trait and the persuasion principle of social proof. First, a repeated measures analysis was employed to investigate if the extraversion trait was covariate for the three social proof messages that were joined with the three product categories. The covariate, extraversion personality trait, was significantly related to the participants social proof message effectiveness, $F(1,91) = 4.2$, $p < .05$. The parameter estimates for the extraversion personality trait that predict the social proof message effectiveness are for the books $B = .13$, $t(93) = .76$, $p = .45$, whiskys $B = .34$, $t(93) = 2.42$, $p < .02$, and the stereos $B = .05$, $t(93) = .26$, $p = .8$. These results indicate that participants high in extraversion were influenced positively by the social proof messages. However, based on Gerber and colleagues (2013) findings we expected a negative correlation between extraversion and the social proof messages. Second, a regression was conducted with the extraversion personality trait as an independent variable and the social proof principle subscale (STPS) as the dependant variable. Results provided no evidence to support H1b. We conclude that hypothesis 1b was not supported.

Hypothesis 1c expected a positive correlation between the openness to experience trait and the persuasion principle of social proof. First, a repeated measures analysis was employed to investigate if the openness to experience trait was a covariate for three social proof persuasive messages that were joined with the three product categories. The covariate, openness to experience personality trait, was significantly related to the participant's social proof message effectiveness, F(1,91) = 4.1, $p < .05$. The parameter estimates for the openness to experience personality trait that predict the social proof message effectiveness are for the books B = .40, t(93) = 2.12, $p < .04$, whiskys B = .15, t(93) = .95, p . = .34, and the stereos B = .01, t(93) = .08, p . = .94. These results are inline with H1c and indicate that participants high in openness to experience were influenced positively by the social proof messages. Secondly, a regression was conducted with the openness to experience trait as an independent variable and the social proof principle subscale (STSP) as a dependent variable. The results show that the openness to experience trait correlated significantly with the social proof principle subscale in the STPS, $R^2(93) = .15$, $p < .001$. The results indicated that participants high in the openness to experience trait scored lower on the social proof principle subscale (Beta = -.38, t(93) = -3.93, $p < .001$). These results are not in line with H1c since a positive effect was expected based on previous research. We conclude that there is mixed evidence for and against hypothesis 1c, we will come back on these findings in the discussion.

Hypothesis 1d expec expected a positive correlation between the agreeableness trait and the persuasion principle of commitment and consistency. First, a repeated measures analysis was employed to investigate if the agreeableness trait was a covariate for the three commitment and consistency persuasive messages that were joined with the three product categories. Results provided no evidence in support for H1d. Secondly, a regression was conducted with the agreeableness trait as an independent variable and the commitment and consistency principle subscale (STPS) as a dependent variable. The results show that the agreeableness trait correlated significantly with the commitment and consistency principle subscale in the STPS, $R^2(93) = .06$, $p < .02$. The results indicate that participants high in the agreeableness trait scored higher on the commitment and consistency principle subscale (Beta = .25, t(93) = 2.49, $p < .02$). This finding is inline with H1d. Based on the subjective evidence we argue that hypothesis 1d warrants further study.

Hypothesis 1e expected a positive correlation between the agreeableness personality trait and the persuasion principle of reciprocity. First, a repeated measures analysis was employed to investigate if the agreeableness trait was a covariate for the three reciprocity persuasive messages that were joined with the three product categories. Results provided no evidence in support for H1e. Second, a regression was conducted with the agreeableness personality trait as an independent variable and the reciprocity principle subscale (STPS) as the dependant variable. Results provided no evidence to support H1e. We conclude that hypothesis 1e was not supported.

Hypothesis 1f expected a positive correlation between the conscientiousness personality trait and the persuasion principle of authority. First, a repeated measures analysis was employed to investigate if the conscientiousness trait was a covariate for the three authority persuasive messages that were joined with the three product categories. Results provided no evidence in support for H1f. Second, a regression was conducted with the conscientiousness personality trait as an independent variable and the authority principle subscale (STPS) as the dependant variable. Results provided no evidence to support H1f. We conclude that hypothesis 1f was not supported.

Explorative analysis: predicting persuasive principal effectiveness based on participants scores on the personality traits

In this part we investigate all possible connections between the six persuasion principles and the participants five personality trait scores. Again two sets of data were analysed but then with all the personality traits included in the analyses. First, a repeated measures analysis was conducted

Table 5.1: Correlations between the big five personality traits and the STPS.

Correlations						
		Openness	Extraversion	Conscientiousness	Agreeableness	Neuroticism
Social Proof principle	Pearson Correlation	-.331**	-.135	.061	.144	.275**
	Sig. (2-tailed)	.001	.194	.554	.165	.007
	N	95	95	95	95	95
Reciprocity principle	Pearson Correlation	-.062	-.039	.242*	.110	.085
	Sig. (2-tailed)	.551	.710	.018	.287	.412
	N	95	95	95	95	95
Scarcity principle	Pearson Correlation	-.016	.100	-.028	-.017	.021
	Sig. (2-tailed)	.878	.334	.785	.866	.842
	N	95	95	95	95	95
Authority principle	Pearson Correlation	-.136	-.108	.001	.081	.174
	Sig. (2-tailed)	.188	.297	.989	.434	.091
	N	95	95	95	95	95
Commitment and consistency principle	Pearson Correlation	-.003	.030	.507**	.236*	.119
	Sig. (2-tailed)	.979	.775	.000	.022	.252
	N	95	95	95	95	95
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

which investigated if a, not yet hypothesised, combination of personality traits covaried with the three reciprocity persuasive messages. Secondly, we investigated if a, not yet hypothesised, combination of personality trait correlated with the persuasive principle subscale in the Susceptibility to Persuasion Scale (STPS). Every persuasion principle was investigated separately in the next few paragraphs. We also ran correlations for all possible connections (6 persuasion principles in the STPS * 5 personality traits). The findings are displayed in Table 5.1. There are many significant findings between the personality traits and the subscales in the STPS which will be investigated in the next few paragraphs.

First, we want to investigate if the relation between the five personality traits and the social proof persuasive principle. A repeated measures analysis was conducted with all five the personality traits included as covariates for the three social proof messages that were joined with the three product categories. The results provided no further relations besides previous findings for hypothesis 1b and 1c. Then, a multiple regression was employed with all five personality traits as independent variables and the social proof principle subscale (STPS) as the dependant variable. Personality traits were removed until a stable prediction was reached. In the end a multiple regression was conducted with the personality traits neuroticism and openness to experience included as independent variables. Using the enter method results show that the neuroticism and openness to experience traits explain a significant amount of the variance in the value of social proof principle subscale in the STPS, (F(2, 89) = 10.56, p < .001, R^2 = .19, R^2 Adjusted = .17). The analysis shows that both neuroticism (Beta = .22, t(91) = 2.27, p < .03) and openness to experience traits (Beta = -.34, t(91) = -3.5, p = .001) are significantly predictors for social proof principle subscale (see Figure 5.1). These findings are in line with our previous findings for hypothesis 1c.

Next, we want to investigate the relations between the five personality traits and the reciprocity

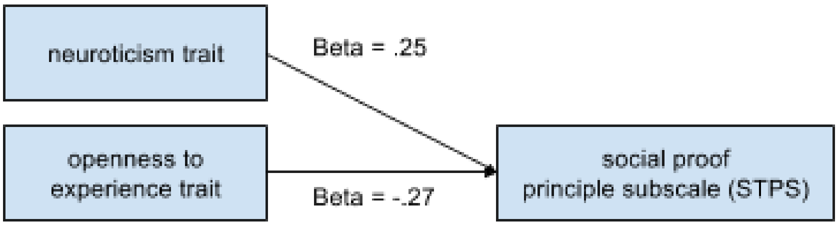

neuroticism trait
openness to experience trait
Beta = .25
Beta = -.27
social proof principle subscale (STPS)

Figure 5.1: Multiple regression predicting the social proof principle subscale.

persuasive principle. A repeated measures analysis was contented with all five the personality traits included as covariates for the three reciprocity messages that were joined with the three product categories. Personality traits were removed from the analysis until a stable prediction was reached. In the end results show that the covariate extraversion was significantly related to the participant's reciprocity message effectiveness, F(1,92) = 8.6, $p < .01$. The parameter estimates for the extraversion personality trait that predict the reciprocity message effectiveness are for the books B = .139, t(94) = .88, $p < .38$, whiskys B = .484, t(94) = 3.66, p . $< .001$, and the stereos B = .102, t(94) = .838, p . = .40. These results indicated that participants high in extraversion were influenced positively by the reciprocity messages (see Figure 5.2). Then, a multiple regression was employed with all five personality traits as independent variables and the rec reciprocity principle subscale (STPS) as the dependant variable. Using the enter method results show that the conscientiousness trait explain a significant amount of the variance in the value of reciprocity principle subscale in the STPS (F(1, 90) = 4.66, p = .034, $R^2 = .05$, R^2 Adjusted = .04). The analysis shows that the conscientiousness trait (Beta = .22, t(91) = 2.16, p = .034) is a significantly predictor for reciprocity persuasive message effectiveness (see Figure 5.3).

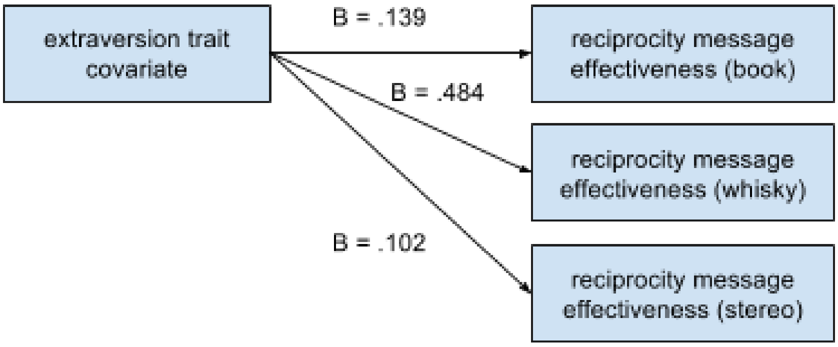

extraversion trait covariate
B = .139
B = .484
B = .102
reciprocity message effectiveness (book)
reciprocity message effectiveness (whisky)
reciprocity message effectiveness (stereo)

Figure 5.2: Repeated measures predicting the three reciprocity persuasive messages effectiveness.

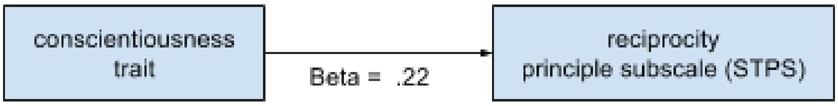

conscientiousness trait
Beta = .22
reciprocity principle subscale (STPS)

Figure 5.3: Multiple regression predicting the reciprocity principle subscale (STPS).

We investigated the relations between the five personality traits and the scarcity, liking and authority persuasive principles. The results provided no evidence for any of these relations.

Last, we want to investigate the relations between the five personality traits and the commitment and consistency persuasive principle. A repeated measures analysis was conducted with all five the personality traits included as covariates for the three commitment and consistency messages that were joined with the three product categories. The results provided no evidence for any of these relations. Then, a multiple regression was employed with all five personality traits as independent variables and the commitment and consistency principle subscale (STPS) as the dependant variable. The agreeableness trait showed multicollinearity with the conscientiousness trait and was therefore not used in this multiple regression. In the end a multiple regression was conducted with the personality traits conscientiousness included as an independent variable. Using the enter method results show that the conscientiousness trait can explain a significant amount of the variance in the commitment and consistency principle subscale in the STPS (F(1, 90) = 30.28, $p < .001$, $R^2 = .25$, R^2 Adjusted = .24). The analysis shows that the conscientiousness trait (Beta = .502, t(91) = 5,5, $p < .001$) is a significantly predictor for commitment and consistency persuasive message effectiveness (see Figure 5.4). These findings are in line with the previously findings for hypothesis 1d. Because the agreeableness and conscientiousness showed signs of multicollinearity. The conscientiousness trait compared to the agreeableness trait was found a better predictor for the commitment and consistency persuasive message effectiveness in this multiple regression.

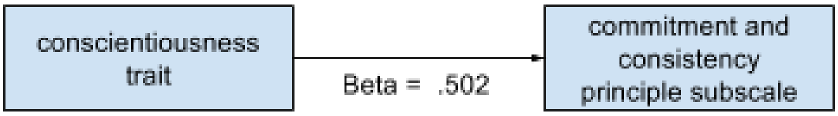


Figure 5.4: Multiple regression predicting the commitment and consistency principle subscale (STPS).

To get a clear picture of all the different connections between the personality traits and the persuasion profiles we made two figures. First, Figure 5.5 shows the relations between the personality traits the three persuasive messages that were joined with the three product categories. Second, Figure 5.6 depicts the relations between the personality traits and the persuasion principle subscales on the STPS. Note that only the effect direction is shown, all the details are noted in the previous paragraphs. We will discuss these findings in the next chapter.

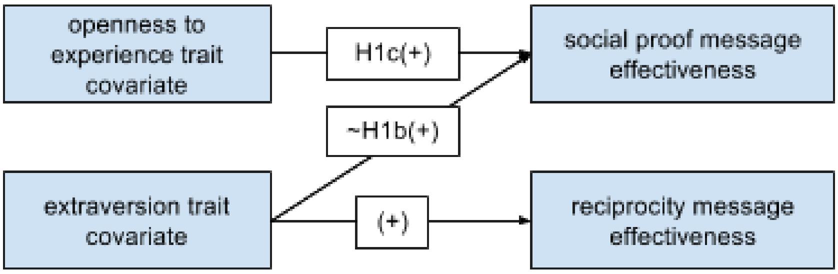

openness to experience trait covariate
H1c(+)
social proof message effectiveness
~H1b(+)
extraversion trait covariate
(+)
reciprocity message effectiveness

Figure 5.5: relationships between the personality traits and the persuasive messages that were joined with the three product categories (∼ indicates inverted finding for a hypothesis).

Personalization of persuasion tactics

To investigate which personalization approach works better, based on what persuaded individuals before on what persuaded similar users. The goal set for both prediction methods is to find the best working persuasion principle for individuals. The results will show per person how often a

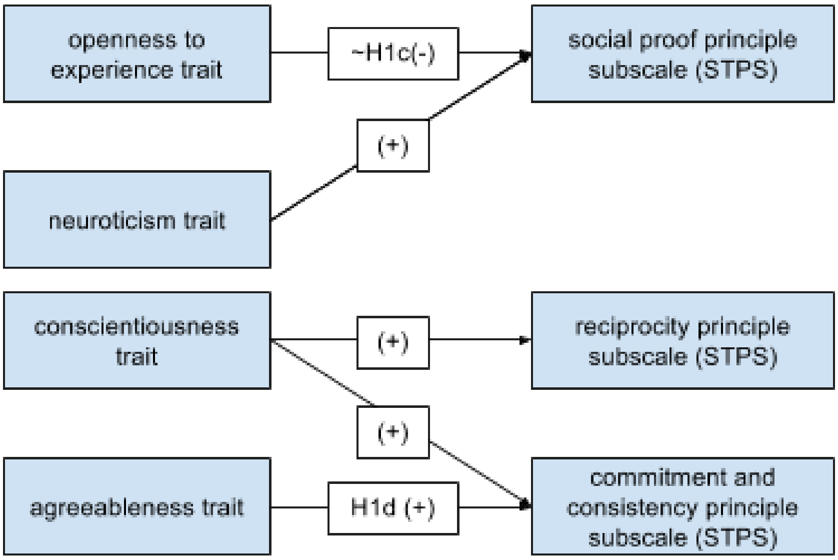

openness to experience trait
~H1c(-)
social proof principle subscale (STPS)
(+)
neuroticism trait
conscientiousness trait
(+)
reciprocity principle subscale (STPS)
(+)
agreeableness trait
H1d (+)
commitment and consistency principle subscale (STPS)

Figure 5.6: relationships between the personality traits and the persuasion principle subscales (STPS) (∼ indicates inverted finding for a hypothesis).

method successfully predicts per product category.

Kaptein and colleagues (2015) argued that based on previous responses a persuasion profile can be build. Based on this we also built a persuasion profile for our participants. We however did not use a Thompson Sampling algorithm (Scott, 2010) to select the next persuasive principle to use since this would only add random variance to the predictions. The persuasion profile entailed that you save how well a persuasion principle worked for individuals. Therefore, the first predictions for the persuasive messages joined with the books are based on the findings in the STPS. The second predictions for the persuasive messages joined with the whisky bottles are based on the findings in the STPS (normalized) plus actual persuasion principle effectiveness for the books (normalized). This process then continued for the third predictions for the persuasive messages joined with the stereos. The performance can be found in Figure 5.7. The findings show that the success rate for predicting based on what worked before was only slightly above the a random draw chance for the book predictions (based on the STPS input).

The second approach was based on looking at similar user to predict what might work for individuals. This means that we first find similar users, then look at what persuasive principle worked best for them. However, there are many methods to calculate the similarities we used two methods. First, a used the Extended Jaccard algorithm (see Figure 5.8) which is a similarity measure for continuous variables. This algorithm calculates the closeness between users based on the personality traits and results back which user is most similar. We then took the most similar user and the prediction entailed what convinced them (see Figure 5.7). The predictions based on similar users are slightly better in total, but not consistently for all the predictions. Second, also a Matrix Factorization algorithm (Koren, Bell and Volinsky, 2009) was used to to calculate what persuasive principle might work for an individual. How this algorithm works is explained above. This algorithm uses the personality trait and the evaluations of other participants to calculate what might work, the results are shown in Figure 5.7. These predictions are worse in total.

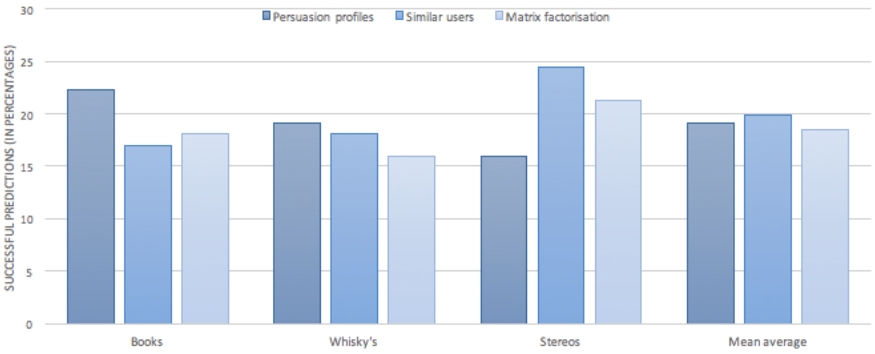


Figure 5.7: performance of the three approaches methods.

$$\mathrm{EJ}(x,y) = \frac{x^\top y}{\|x\|_2^2 + \|y\|_2^2 - x^\top y}$$

Figure 5.8: The Extended Jaccard algorithm.

Chapter 6

Discussion

Relationships between personality and the persuasion principles
The goal of this research was to investigate the relationships between ones personality and the way they could best be persuaded. Based on previous research, we defined six relationships (hypotheses 1a - 1f) based on our understanding of the personality traits and the persuasive principles. To our knowledge, earlier research has not directly predicted the effectiveness of persuasive principles based on personality traits. Therefore, we researched both the personality traits and persuasive principles and used our own understanding to generate several hypotheses. We found no evidence to support the hypotheses (1a, 1b, 1e and 1f), we found evidence for H1d and mixed evidence for H1c. Furthermore we found several connections during the exploratory phase of the analysis.

Hypothesis 1c expected a positive correlation between the openness to experience personality trait and the users evaluation of the products that were promoted using the social proof persuasion principle. Our data shows that there is evidence in that the social proof messages joined with the products were rated higher by people that are open to new experiences. This is also in line with earlier research by Gerber and colleagues (2013) who found that people with this personality trait were most convinced to vote with a social proof argument. We for example used the message Over a million copies have been sold worldwide. joined with a random book. We expect that the social proof principle is seen as evidence of sorts that a certain product increased the capabilities of others. Therefore, if they haven't read the book they are inclined to be open for those experiences.

In the exploratory analyses extraversion was also found to have positive relation with the social proof messages that were paired with the products. Based on previous research done by Gerber and colleagues (2013) we expected extraverts to not be convinced by the social proof messages (hypothesis 1b). Therefore, our data is not inline with their findings and thus our hypothesis. A reason for this might be that Gerber and colleagues phrased their social pressure message in a direct manner to get people to vote. Our messages do not have this directness they only state a fact about the social aspects of the product (see Table 4.1). Looking at both findings we think the psychological reactance to this pressure might be the reason for why the they did not vote more in their experiment. However, further investigation is needed to see if this is the case.

Our data showed that people who score high on the extrovert trait are more easily influenced by the social proof messages that were paired with the products. We argue that this finding shows that extraverts find the affiliation with other social actors rewarding and are therefore convinced by the social proof persuasive principle. This is inline with the finding in the exploratory analysis that extraverts are also convinced by the reciprocity arguments that were displayed with the products. Our reciprocity principle was focused on the giving a reward (in the form of discounts) before they actually bought the product. Which is inline with the findings of Lucas and colleagues (2000) that extraverts are reward sensitive. Our findings expand on the experiment by Hirsch, Kang and Bodenhausen (2012) who also implemented reward sensitivity in their arguments to sell phones.

Participants who scored high on the openness to experience personality trait also scored higher on the social proof principle subscale in the Susceptibility to Persuasive Scale (STPS). This is unlike our previously discussed finding for the social proof persuasion principle inverted to our hypothesis 1c. This finding might be due to the the self-presentation bias (Shen, Sullivan, Igoe Shen, 1996). Which states that there is a difference to what we want to show others and what we actually do. It could be that people high in the openness to experience trait wanted to portray that they were not influenced by the other social influences since they want to appear investigative as Lonky, Cause and Rodin (1984) described the trait. But this evidence leads to more questions about the correlation between social proof principle subscale in the STPS and the connection to actual behavior to social proof persuasive messages.

The exploratory analysis showed that participants high in neuroticism trait and high in openness to experience also scored higher on the the social proof principle subscale (STPS). The finding that the neurotic individuals say they look towards others for guidance might be because they want to avoid uncertainty, and the social proof principle works better for these circumstances (Hirsh Inzlicht, 2008). However, if the uncertainty factor is the leading reason for the relation between the neuroticism trait a rephrasing of the social proof principle subscale in the STPS might eliminate this effect. We want to note that our research found no evidence to support the same relationship with the implement messages. Further research might investigate if the uncertainty can be removed from the social proof principle subscale in the STPS. For example, the question: I often rely on other people to know what I should do. specifies no context or scenario why to look towards other social influencers.

Hypothesis 1d argued that agreeable individuals would value interpersonal relationships and therefore the commitment and consistency principle. Based on evidence we know that agreeable say they will be influenced by the commitment and consistency principle. However, we expect that this is the case if a person can be found on the other side of the transaction. Which is arguably the way the commitment and consistency principle is phrased in the STPS (see Appendix C). We realize that our implementation of the commitment and consistency principle was a bit robotic. We expect that our persuasive messages were not more effective because the persuasive messages were brought by a machine. Research is being done to simulate a person with the help of an avatar (Ruijten, Ham Midden, 2011). Further research might focus on testing the reciprocity persuasive principle with a human like avatar to test if persons agreeableness is an influence on this persuasion principle.

In the exploratory analysis we found a positive relation between the conscientiousness personality trait and the reciprocity principle subscale in the STPS. Individuals high in conscientiousness are described as high in impulse control and goal directed. That these individuals valued the reciprocity rule might have something to do with the realization that interpersonal relationships are often necessary to achieve their own goals. The finding that the conscientiousness and agreeable personality traits are both positively related to the commitment and consistency principle subscale in the STPS would emphasize this argument. Therefore, this does provide some evidence to support hypothesis 1d that states that there is a positive relation between the agreeableness trait and the commitment and consistency principle. However, we did not find evidence for the the relationships between these two personality traits and the commitment and consistency persuasive messages that were implemented with the products. This might be due to the lack of the human touch. While the statements in the STPS do pose inquiries involving interaction with persons. Therefore, we also expect that the use of an avatar might help to increase the effectiveness of the commitment and consistency principle in persuasive systems.

Practical implications and future work

Our research was not focused on disproving the effectiveness of Kapteins persuasive profiles approach. Rather, we wanted to expand on their research and investigate new ways of personalizing persuasion. We used 3 personalisation algorithms to predict the best persuasive principle for an individual. Our results did not show a radical change between personalizing based on persuasive profiles or personalizing based on similar users or matrix factorisation. We do note that the small sample size and the simulated environment did not help to prove our point. This research focused on finding the relations between one's personality and persuasion principle effectiveness. Our findings show that integrating a person's personality in a persuasive system has merit, however how to actually put this to use in a persuasive system algorithm is a complex problem. Therefore we want to argue for more computer scientists to work together with psychologists to write better algorithms based on what we know about persuasion.

Although our findings did not show a radical improvement in predicting what persuasive principles would work best. However, to look what worked at other individuals in the same situation seems logical. Future research should investigate how this data can be incorporated into a personalization algorithm. Matrix factorisation can handle all sorts of data and seems like the likely algorithm to help in the question for the ultimate persuasive system. However, further research is needed to see how the data about a persuasive message can best be implemented.

Actual implementations of this research in a webshop might for the moment still be difficult. Before any prediction can be made on the effectiveness of the persuasion principle, data is needed about the customer who comes in. Asking the customer to first fill in a 44 item questionnaire before they can start shopping does not seem like the right approach. To solve this problem this information might come from other sources. Research done by Back and colleagues (2010) shows that Facebook can determine user's personality based on their timeline. This data can also be retrieved from Facebook if the user agrees to it. There are also another method to acquire data about personality, but it is less accurate, that involves the analysis of one's email address (Back, Schmukle Egloff, 2008).

As mentioned before, persuasion might work better with a human like interface and research is currently being done to increase the effects of this in persuasive systems. However, for the time being these avatars have hardly been implemented in commercial applications and they never really have a persuading role. This lack of the human touch in persuasive systems might be mediated with the simulated personal touch but for the time being seems to complex to implement in commercial applications.

This research can be implemented to segment populations that buy certain products. For example if your digital stores main audience is very extrovert both the social proof and the reciprocity persuasive principles will most likely work better than others. However, we also think that other variables of a persuasion attempt like a person's domain, knowledge, attitudes, norms, current values and situation should be measured more consistently. Research might therefore be helped by mapping out all the currently known effects on persuasion and how to combine them in your research.

There is still a lot of work to be done before Foggs (2002) perfect persuasive system is built. Results showed that there is merit to our approach of looking at what persuaded others, but how to automate this with a personalization algorithm needs to be investigated further. This research provides a small step towards gaining a better understanding of how persuasive systems might be tailored based on an individual's personality. Its now up to the salesmen to implement this knowledge about their customers into their digital stores to increase persuasive message effectiveness.

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Appendix A

Big Five Inventory questionnaire

John, O.P., Donahue, E.M., Kentle, R. L. (1991). The Big Five Inventory–Versions 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.
John, O. P., Naumann, L. P., Soto, C. J. (2008). Paradigm Shift to the Integrative Big Five Trait Taxonomy (3rd ed., pp. 114158). New York, NY: Guilford Press.

What applies to you?
Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please select an option (Strongly agree - Disagree - Neutral - Agree - Strongly agree) to indicate the extent to which you agree or disagree with that statement.

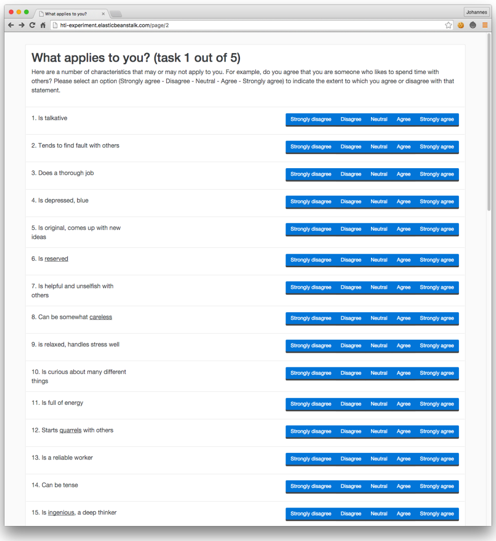
1. Is talkative
2. Tends to find fault with others
3. Does a thorough job
4. Is depressed, blue
5. Is original, comes up with new ideas
6. Is reserved
7. Is helpful and unselfish with others
8. Can be somewhat careless
9. is relaxed, handles stress well
10. Is curious about many different things
11. Is full of energy
12. Starts quarrels with others
13. Is a reliable worker
14. Can be tense
15. Is ingenious, a deep thinker
16. Generates a lot of enthusiasm
17. Has a forgiving nature

18. Tends to be disorganized
19. Worries a lot
20. Has an active imagination
21. Tends to be quiet
22. Is generally trusting
23. Tends to be lazy
24. Is emotionally stable, not easily upset
25. Is inventive
26. Has an assertive personality
27. Can be cold and aloof
28. Perseveres until the task is finished
29. Can be moody
30. Values artistic, aesthetic experiences
31. Is sometimes shy, inhibited
32. Is considerate and kind to almost everyone
33. Does things efficiently
34. Remains calm in tense situations
35. Prefers work that is routine
36. ls outgoing, sociable
37. Is sometimes rude to others
38. Makes plans and follows through with them
39. Gets nervous easily
40. Likes to reflect, play with ideas
41. Has few artistic interests
42. Likes to cooperate with others
43. Is easily distracted
44. Is sophisticated in art, music, or literature

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36
Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42
Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R
Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39
Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

Appendix B

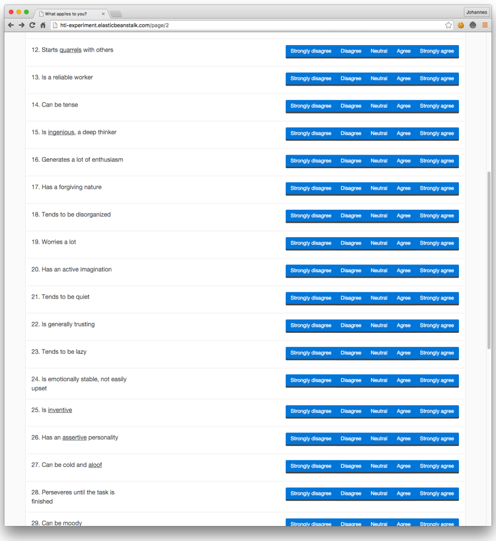
Product descriptions and experiment setup


What applies to you?
Johannes
hti-experiment.elasticbeanstalk.com/page/2
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

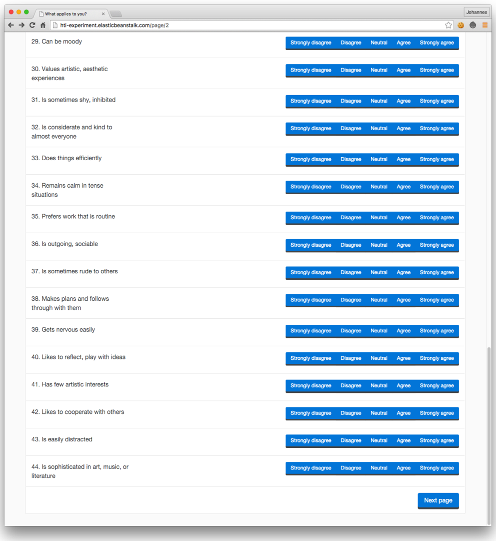
What applies to you? (task 1 out of 5)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please select an option (Strongly agree - Disagree - Neutral - Agree - Strongly agree) to indicate the extent to which you agree or disagree with that statement.

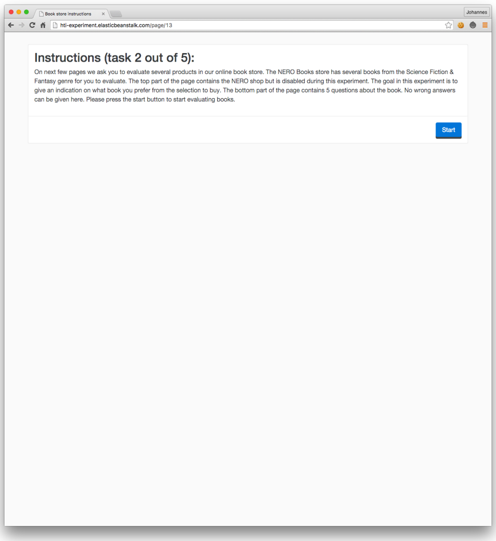
1. Is talkative
2. Tends to find fault with others
3. Does a thorough job
4. Is depressed, blue
5. Is original, comes up with new ideas
6. Is reserved
7. Is helpful and unselfish with others
8. Can be somewhat careless
9. is relaxed, handles stress well
10. Is curious about many different things
11. Is full of energy
12. Starts quarrels with others
13. Is a reliable worker
14. Can be tense
15. Is ingenious, a deep thinker


What applies to you?
Johannes
hti-experiment.elasticbeanstalk.com/page/2
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

12. Starts quarrels with others
13. Is a reliable worker
14. Can be tense
15. Is ingenious, a deep thinker
16. Generates a lot of enthusiasm
17. Has a forgiving nature
18. Tends to be disorganized
19. Worries a lot
20. Has an active imagination
21. Tends to be quiet
22. Is generally trusting
23. Tends to be lazy
24. Is emotionally stable, not easily upset
25. Is inventive
26. Has an assertive personality
27. Can be cold and aloof
28. Perseveres until the task is finished
29. Can be moody

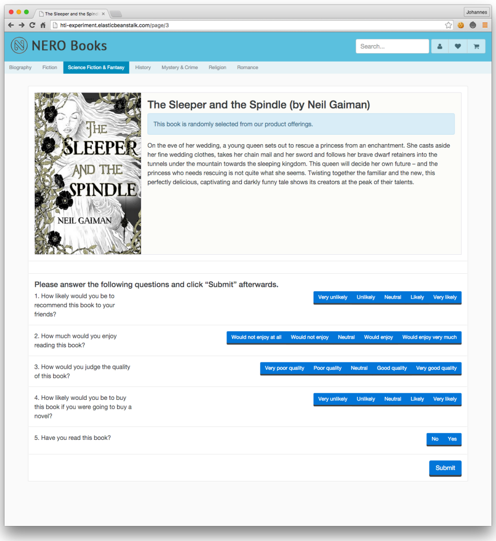

What applies to you?
hti-experiment.elasticbeanstalk.com/page/2
Johannes
Strongly disagree
Disagree
Neutral
Agree
Strongly agree
Next page

29. Can be moody
30. Values artistic, aesthetic experiences
31. Is sometimes shy, inhibited
32. Is considerate and kind to almost everyone
33. Does things efficiently
34. Remains calm in tense situations
35. Prefers work that is routine
36. Is outgoing, sociable
37. Is sometimes rude to others
38. Makes plans and follows through with them
39. Gets nervous easily
40. Likes to reflect, play with ideas
41. Has few artistic interests
42. Likes to cooperate with others
43. Is easily distracted
44. Is sophisticated in art, music, or literature


Book store instructions
hti-experiment.elasticbeanstalk.com/page/13
Johannes
Start

Instructions (task 2 out of 5):

On next few pages we ask you to evaluate several products in our online book store. The NERO Books store has several books from the Science Fiction & Fantasy genre for you to evaluate. The top part of the page contains the NERO shop but is disabled during this experiment. The goal in this experiment is to give an indication on what book you prefer from the selection to buy. The bottom part of the page contains 5 questions about the book. No wrong answers can be given here. Please press the start button to start evaluating books.


The Sleeper and the Spind
hti-experiment.elasticbeanstalk.com/page/3
Johannes
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
THE SLEEPER AND THE SPINDLE
NEIL GAIMAN
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Good quality
Very good quality
No
Yes
Submit

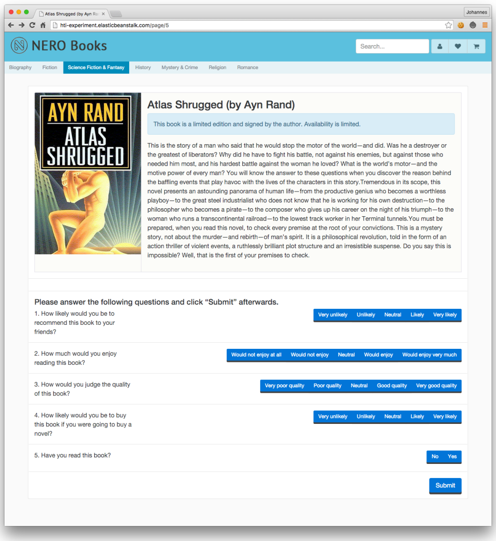
The Sleeper and the Spindle (by Neil Gaiman)

This book is randomly selected from our product offerings.

On the eve of her wedding, a young queen sets out to rescue a princess from an enchantment. She casts aside her fine wedding clothes, takes her chain mail and her sword and follows her brave dwarf retainers into the tunnels under the mountain towards the sleeping kingdom. This queen will decide her own future – and the princess who needs rescuing is not quite what she seems. Twisting together the familiar and the new, this perfectly delicious, captivating and darkly funny tale shows its creators at the peak of their talents.

Please answer the following questions and click “Submit” afterwards.

1. How likely would you be to recommend this book to your friends?
2. How much would you enjoy reading this book?
3. How would you judge the quality of this book?
4. How likely would you be to buy this book if you were going to buy a novel?
5. Have you read this book?


Atlas Shrugged (by Ayn Ra
hti-experiment.elasticbeanstalk.com/page/5
Johannes
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
AYN RAND
ATLAS SHRUGGED
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Good quality
Very good quality
No
Yes
Submit

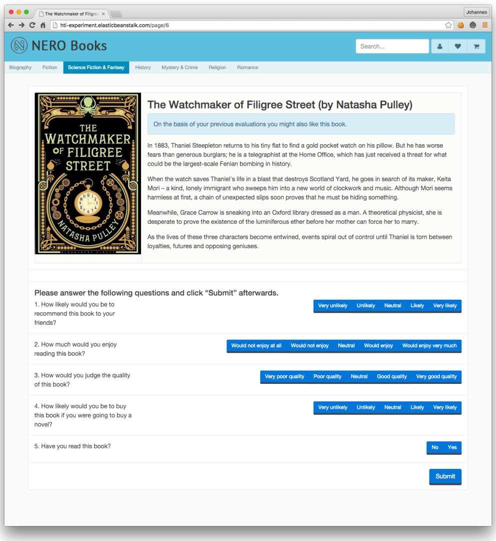
Atlas Shrugged (by Ayn Rand)

This book is a limited edition and signed by the author. Availability is limited.

This is the story of a man who said that he would stop the motor of the world—and did. Was he a destroyer or the greatest of liberators? Why did he have to fight his battle, not against his enemies, but against those who needed him most, and his hardest battle against the woman he loved? What is the world's motor—and the motive power of every man? You will know the answer to these questions when you discover the reason behind the baffling events that play havoc with the lives of the characters in this story.Tremendous in its scope, this novel presents an astounding panorama of human life—from the productive genius who becomes a worthless playboy—to the great steel industrialist who does not know that he is working for his own destruction—to the philosopher who becomes a pirate—to the composer who gives up his career on the night of his triumph—to the woman who runs a transcontinental railroad—to the lowest track worker in her Terminal tunnels.You must be prepared, when you read this novel, to check every premise at the root of your convictions. This is a mystery story, not about the murder—and rebirth—of man's spirit. It is a philosophical revolution, told in the form of an action thriller of violent events, a ruthlessly brilliant plot structure and an irresistible suspense. Do you say this is impossible? Well, that is the first of your premises to check.

Please answer the following questions and click “Submit” afterwards.

1. How likely would you be to recommend this book to your friends?
2. How much would you enjoy reading this book?
3. How would you judge the quality of this book?
4. How likely would you be to buy this book if you were going to buy a novel?
5. Have you read this book?


The Watchmaker of Filigre
Johannes
hti-experiment.elasticbeanstalk.com/page/6
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
THE WATCHMAKER OF FILIGREE STREET
NATASHA PULLEY
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit

The Watchmaker of Filigree Street (by Natasha Pulley)

On the basis of your previous evaluations you might also like this book.

In 1883, Thaniel Steepleton returns to his tiny flat to find a gold pocket watch on his pillow. But he has worse fears than generous burglars; he is a telegraphist at the Home Office, which has just received a threat for what could be the largest-scale Fenian bombing in history.

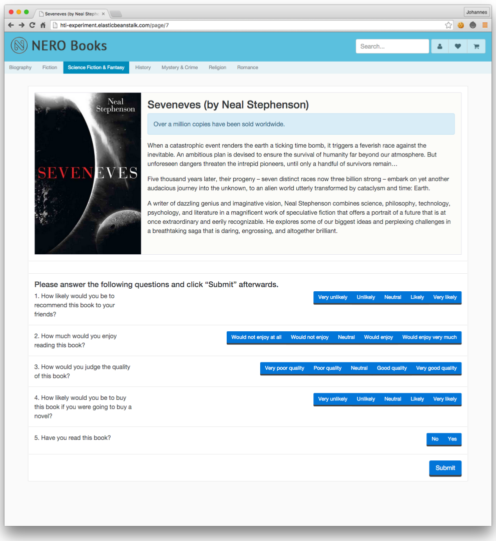
When the watch saves Thaniel's life in a blast that destroys Scotland Yard, he goes in search of its maker, Keita Mori – a kind, lonely immigrant who sweeps him into a new world of clockwork and music. Although Mori seems harmless at first, a chain of unexpected slips soon proves that he must be hiding something.

Meanwhile, Grace Carrow is sneaking into an Oxford library dressed as a man. A theoretical physicist, she is desperate to prove the existence of the luminiferous ether before her mother can force her to marry.

As the lives of these three characters become entwined, events spiral out of control until Thaniel is torn between loyalties, futures and opposing geniuses.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this book to your friends?
2. How much would you enjoy reading this book?
3. How would you judge the quality of this book?
4. How likely would you be to buy this book if you were going to buy a novel?
5. Have you read this book?


Seveneves (by Neal Steph
Johannes
hti-experiment.elasticbeanstalk.com/page/7
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
Neal Stephenson
SEVENEVES
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit

Seveneves (by Neal Stephenson)

Over a million copies have been sold worldwide.

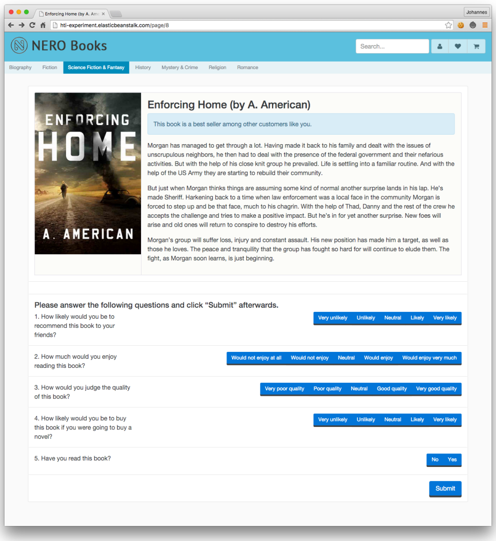
When a catastrophic event renders the earth a ticking time bomb, it triggers a feverish race against the inevitable. An ambitious plan is devised to ensure the survival of humanity far beyond our atmosphere. But unforeseen dangers threaten the intrepid pioneers, until only a handful of survivors remain…

Five thousand years later, their progeny – seven distinct races now three billion strong – embark on yet another audacious journey into the unknown, to an alien world utterly transformed by cataclysm and time: Earth.

A writer of dazzling genius and imaginative vision, Neal Stephenson combines science, philosophy, technology, psychology, and literature in a magnificent work of speculative fiction that offers a portrait of a future that is at once extraordinary and eerily recognizable. He explores some of our biggest ideas and perplexing challenges in a breathtaking saga that is daring, engrossing, and altogether brilliant.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this book to your friends?
2. How much would you enjoy reading this book?
3. How would you judge the quality of this book?
4. How likely would you be to buy this book if you were going to buy a novel?
5. Have you read this book?


Enforcing Home (by A. Am
Johannes
hti-experiment.elasticbeanstalk.com/page/8
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
ENFORCING HOME
A. AMERICAN
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit

Enforcing Home (by A. American)

This book is a best seller among other customers like you.

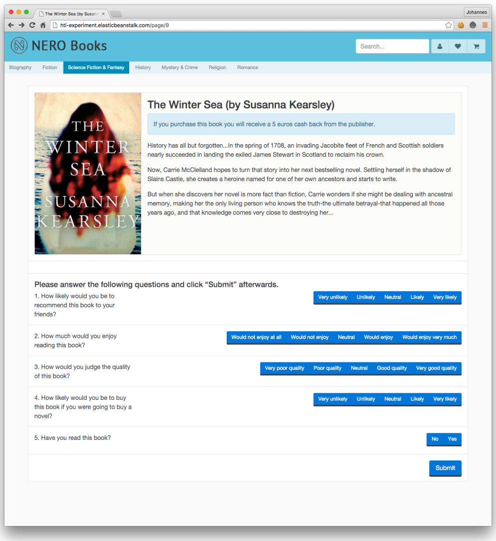
Morgan has managed to get through a lot. Having made it back to his family and dealt with the issues of unscrupulous neighbors, he then had to deal with the presence of the federal government and their nefarious activities. But with the help of his close knit group he prevailed. Life is settling into a familiar routine. And with the help of the US Army they are starting to rebuild their community.

But just when Morgan thinks things are assuming some kind of normal another surprise lands in his lap. He's made Sheriff. Harkening back to a time when law enforcement was a local face in the community Morgan is forced to step up and be that face, much to his chagrin. With the help of Thad, Danny and the rest of the crew he accepts the challenge and tries to make a positive impact. But he's in for yet another surprise. New foes will arise and old ones will return to conspire to destroy his efforts.

Morgan's group will suffer loss, injury and constant assault. His new position has made him a target, as well as those he loves. The peace and tranquility that the group has fought so hard for will continue to elude them. The fight, as Morgan soon learns, is just beginning.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this book to your friends?
2. How much would you enjoy reading this book?
3. How would you judge the quality of this book?
4. How likely would you be to buy this book if you were going to buy a novel?
5. Have you read this book?


The Winter Sea (by Susann
Johannes
hti-experiment.elasticbeanstalk.com/page/9
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
THE WINTER SEA
SUSANNA KEARSLEY
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit

The Winter Sea (by Susanna Kearsley)

If you purchase this book you will receive a 5 euros cash back from the publisher.

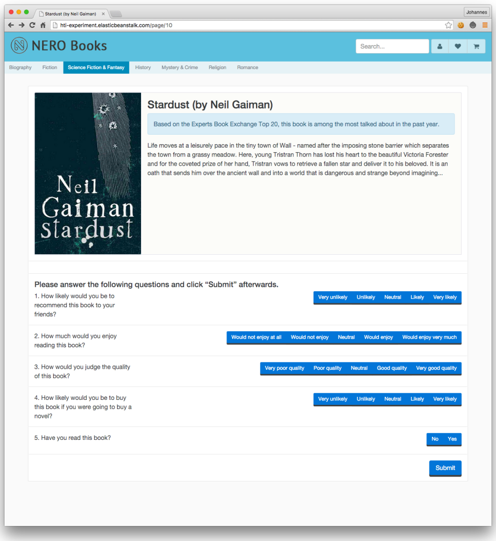
History has all but forgotten...In the spring of 1708, an invading Jacobite fleet of French and Scottish soldiers nearly succeeded in landing the exiled James Stewart in Scotland to reclaim his crown.

Now, Carrie McClelland hopes to turn that story into her next bestselling novel. Settling herself in the shadow of Slains Castle, she creates a heroine named for one of her own ancestors and starts to write.

But when she discovers her novel is more fact than fiction, Carrie wonders if she might be dealing with ancestral memory, making her the only living person who knows the truth-the ultimate betrayal-that happened all those years ago, and that knowledge comes very close to destroying her...

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this book to your friends?
2. How much would you enjoy reading this book?
3. How would you judge the quality of this book?
4. How likely would you be to buy this book if you were going to buy a novel?
5. Have you read this book?


Stardust (by Neil Gaiman)
Johannes
hti-experiment.elasticbeanstalk.com/page/10
NERO Books
Search...
Biography
Fiction
Science Fiction & Fantasy
History
Mystery & Crime
Religion
Romance
Neil Gaiman Stardust
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
No
Yes
Submit

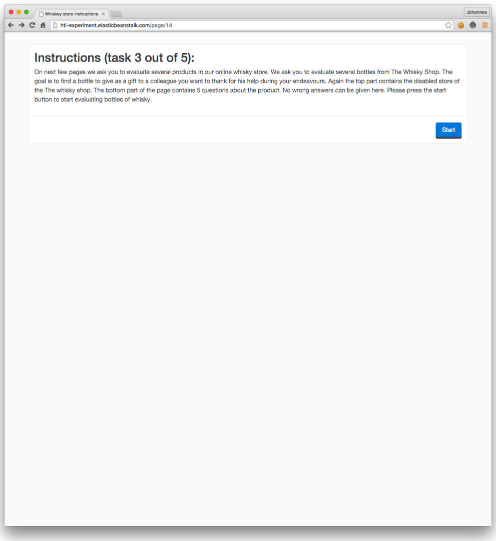
Stardust (by Neil Gaiman)

Based on the Experts Book Exchange Top 20, this book is among the most talked about in the past year.

Life moves at a leisurely pace in the tiny town of Wall - named after the imposing stone barrier which separates the town from a grassy meadow. Here, young Tristran Thorn has lost his heart to the beautiful Victoria Forester and for the coveted prize of her hand, Tristran vows to retrieve a fallen star and deliver it to his beloved. It is an oath that sends him over the ancient wall and into a world that is dangerous and strange beyond imagining...

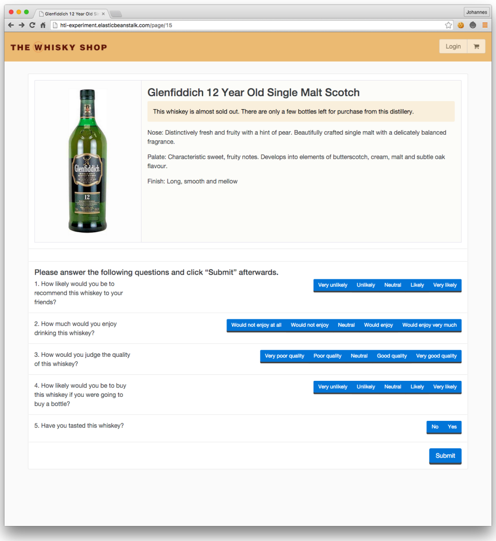
Please answer the following questions and click “Submit” afterwards.

1. How likely would you be to recommend this book to your friends?
2. How much would you enjoy reading this book?
3. How would you judge the quality of this book?
4. How likely would you be to buy this book if you were going to buy a novel?
5. Have you read this book?


Whiskey store instructions
Johannes
hti-experiment.elasticbeanstalk.com/page/14
Start

Instructions (task 3 out of 5):

On next few pages we ask you to evaluate several products in our online whisky store. We ask you to evaluate several bottles from The Whisky Shop. The goal is to find a bottle to give as a gift to a colleague you want to thank for his help during your endeavours. Again the top part contains the disabled store of the The whisky shop. The bottom part of the page contains 5 questions about the product. No wrong answers can be given here. Please press the start button to start evaluating bottles of whisky.


Glenfiddich 12 Year Old Si
Johannes
hti-experiment.elasticbeanstalk.com/page/15
THE WHISKY SHOP
Login
Glenfiddich
12
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
No
Yes
Submit

Glenfiddich 12 Year Old Single Malt Scotch

This whiskey is almost sold out. There are only a few bottles left for purchase from this distillery.

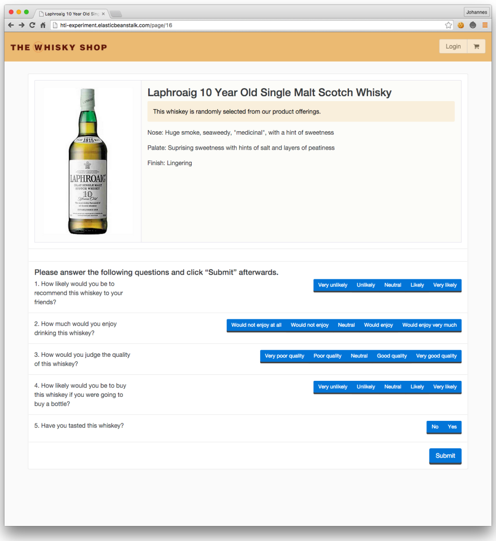
Nose: Distinctively fresh and fruity with a hint of pear. Beautifully crafted single malt with a delicately balanced fragrance.

Palate: Characteristic sweet, fruity notes. Develops into elements of butterscotch, cream, malt and subtle oak flavour.

Finish: Long, smooth and mellow

Please answer the following questions and click “Submit” afterwards.

1. How likely would you be to recommend this whiskey to your friends?
2. How much would you enjoy drinking this whiskey?
3. How would you judge the quality of this whiskey?
4. How likely would you be to buy this whiskey if you were going to buy a bottle?
5. Have you tasted this whiskey?


Laphroaig 10 Year Old Sing
Johannes
hti-experiment.elasticbeanstalk.com/page/16
THE WHISKY SHOP
Login
LAPHROAIG
10
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
No
Yes
Submit

Laphroaig 10 Year Old Single Malt Scotch Whisky

This whiskey is randomly selected from our product offerings.

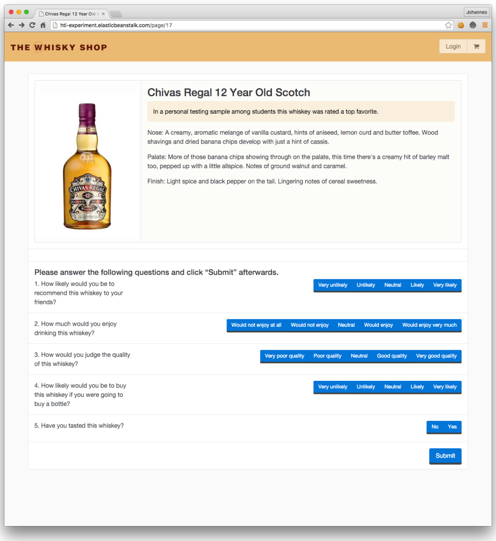
Nose: Huge smoke, seaweedy, "medicinal", with a hint of sweetness

Palate: Suprising sweetness with hints of salt and layers of peatiness

Finish: Lingering

Please answer the following questions and click “Submit” afterwards.

1. How likely would you be to recommend this whiskey to your friends?
2. How much would you enjoy drinking this whiskey?
3. How would you judge the quality of this whiskey?
4. How likely would you be to buy this whiskey if you were going to buy a bottle?
5. Have you tasted this whiskey?


Chivas Regal 12 Year Old S
Johannes
hti-experiment.elasticbeanstalk.com/page/17
THE WHISKY SHOP
Login

Chivas Regal 12 Year Old Scotch

In a personal testing sample among students this whiskey was rated a top favorite.

Nose: A creamy, aromatic melange of vanilla custard, hints of aniseed, lemon curd and butter toffee. Wood shavings and dried banana chips develop with just a hint of cassis.

Palate: More of those banana chips showing through on the palate, this time there's a creamy hit of barley malt too, pepped up with a little allspice. Notes of ground walnut and caramel.

Finish: Light spice and black pepper on the tail. Lingering notes of cereal sweetness.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this whiskey to your friends?

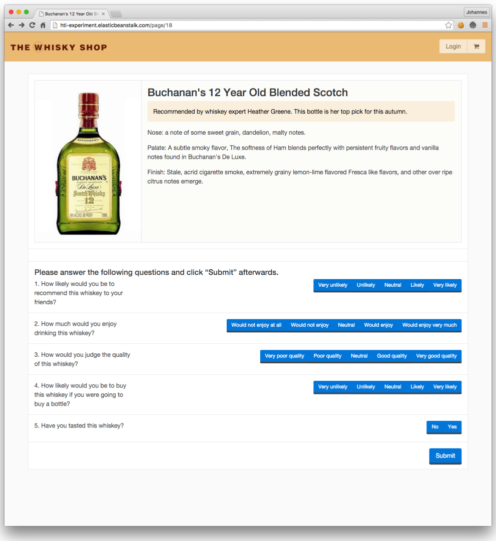
2. How much would you enjoy drinking this whiskey?

3. How would you judge the quality of this whiskey?

4. How likely would you be to buy this whiskey if you were going to buy a bottle?

5. Have you tasted this whiskey?

Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit


Buchanan's 12 Year Old Bl
Johannes
hti-experiment.elasticbeanstalk.com/page/18
THE WHISKY SHOP
Login

Buchanan's 12 Year Old Blended Scotch

Recommended by whiskey expert Heather Greene. This bottle is her top pick for this autumn.

Nose: a note of some sweet grain, dandelion, malty notes.

Palate: A subtle smoky flavor, The softness of Ham blends perfectly with persistent fruity flavors and vanilla notes found in Buchanan's De Luxe.

Finish: Stale, acrid cigarette smoke, extremely grainy lemon-lime flavored Fresca like flavors, and other over ripe citrus notes emerge.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this whiskey to your friends?

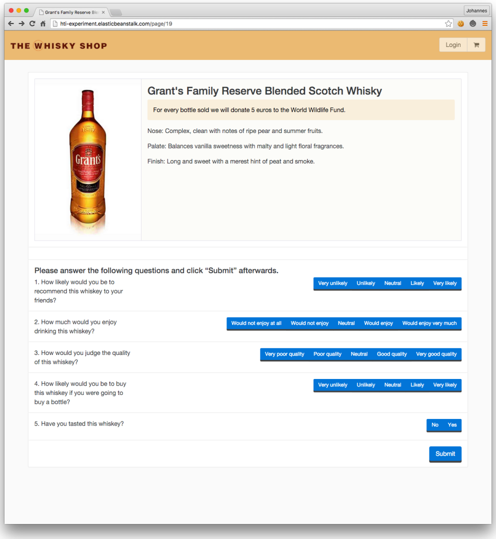
2. How much would you enjoy drinking this whiskey?

3. How would you judge the quality of this whiskey?

4. How likely would you be to buy this whiskey if you were going to buy a bottle?

5. Have you tasted this whiskey?

Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit


Grant's Family Reserve Ble
Johannes
hti-experiment.elasticbeanstalk.com/page/19
THE WHISKY SHOP
Login

Grant's Family Reserve Blended Scotch Whisky

For every bottle sold we will donate 5 euros to the World Wildlife Fund.

Nose: Complex, clean with notes of ripe pear and summer fruits.

Palate: Balances vanilla sweetness with malty and light floral fragrances.

Finish: Long and sweet with a merest hint of peat and smoke.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this whiskey to your friends?

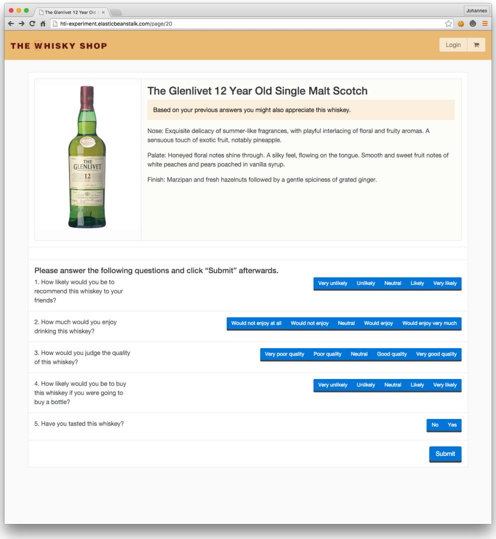
2. How much would you enjoy drinking this whiskey?

3. How would you judge the quality of this whiskey?

4. How likely would you be to buy this whiskey if you were going to buy a bottle?

5. Have you tasted this whiskey?

Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit


The Glenlivet 12 Year Old
Johannes
hti-experiment.elasticbeanstalk.com/page/20
THE WHISKY SHOP
Login

The Glenlivet 12 Year Old Single Malt Scotch

Based on your previous answers you might also appreciate this whiskey.

Nose: Exquisite delicacy of summer-like fragrances, with playful interlacing of floral and fruity aromas. A sensuous touch of exotic fruit, notably pineapple.

Palate: Honeyed floral notes shine through. A silky feel, flowing on the tongue. Smooth and sweet fruit notes of white peaches and pears poached in vanilla syrup.

Finish: Marzipan and fresh hazelnuts followed by a gentle spiciness of grated ginger.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this whiskey to your friends?

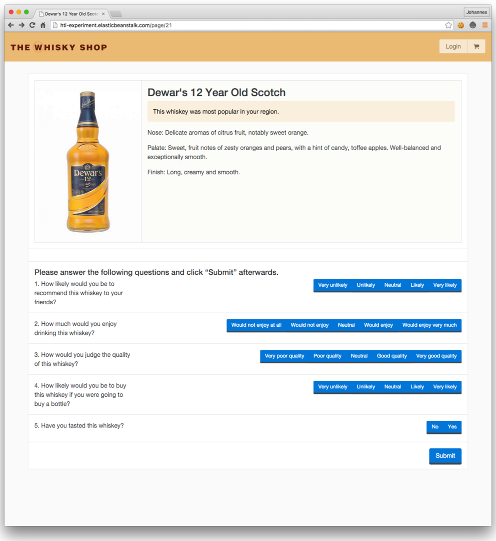
2. How much would you enjoy drinking this whiskey?

3. How would you judge the quality of this whiskey?

4. How likely would you be to buy this whiskey if you were going to buy a bottle?

5. Have you tasted this whiskey?

Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit


Dewar's 12 Year Old Scotc
hti-experiment.elasticbeanstalk.com/page/21
Johannes
THE WHISKY SHOP
Login

Dewar's 12 Year Old Scotch

This whiskey was most popular in your region.

Nose: Delicate aromas of citrus fruit, notably sweet orange.

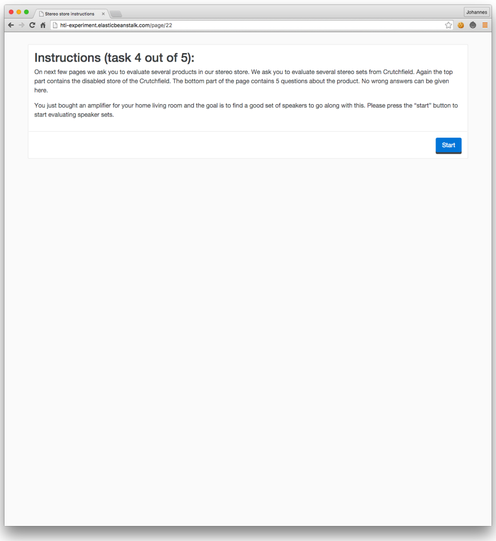
Palate: Sweet, fruit notes of zesty oranges and pears, with a hint of candy, toffee apples. Well-balanced and exceptionally smooth.

Finish: Long, creamy and smooth.

Please answer the following questions and click "Submit" afterwards.

1. How likely would you be to recommend this whiskey to your friends?
2. How much would you enjoy drinking this whiskey?
3. How would you judge the quality of this whiskey?
4. How likely would you be to buy this whiskey if you were going to buy a bottle?
5. Have you tasted this whiskey?

Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit

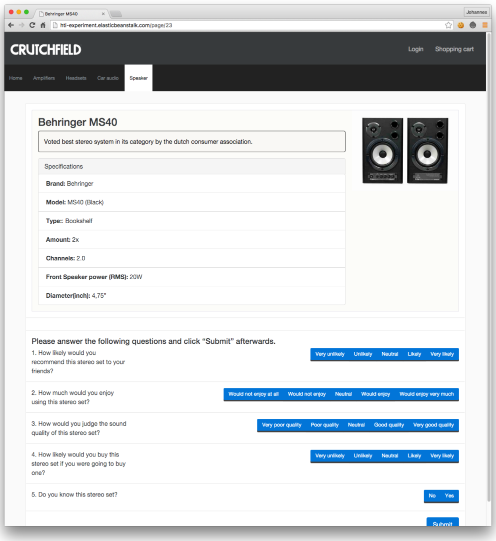

Stereo store instructions
hti-experiment.elasticbeanstalk.com/page/22
Johannes

Instructions (task 4 out of 5):

On next few pages we ask you to evaluate several products in our stereo store. We ask you to evaluate several stereo sets from Crutchfield. Again the top part contains the disabled store of the Crutchfield. The bottom part of the page contains 5 questions about the product. No wrong answers can be given here.

You just bought an amplifier for your home living room and the goal is to find a good set of speakers to go along with this. Please press the "start" button to start evaluating speaker sets.

Start


Behringer MS40
hti-experiment.elasticbeanstalk.com/page/23
Johannes
CRUTCHFIELD
Login
Shopping cart
Home
Amplifiers
Headsets
Car audio
Speaker

Behringer MS40

Voted best stereo system in its category by the dutch consumer association.

Specifications

Brand: Behringer

Model: MS40 (Black)

Type:: Bookshelf

Amount: 2x

Channels: 2.0

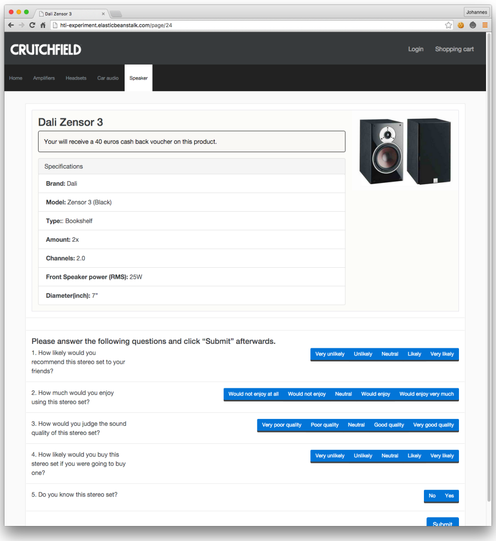
Front Speaker power (RMS): 20W

Diameter(inch): 4,75"

Please answer the following questions and click "Submit" afterwards.

1. How likely would you recommend this stereo set to your friends?
2. How much would you enjoy using this stereo set?
3. How would you judge the sound quality of this stereo set?
4. How likely would you buy this stereo set if you were going to buy one?
5. Do you know this stereo set?

Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit


Dali Zensor 3
hti-experiment.elasticbeanstalk.com/page/24
Johannes
CRUTCHFIELD
Login
Shopping cart
Home
Amplifiers
Headsets
Car audio
Speaker

Dali Zensor 3

Your will receive a 40 euros cash back voucher on this product.

Specifications

Brand: Dali

Model: Zensor 3 (Black)

Type:: Bookshelf

Amount: 2x

Channels: 2.0

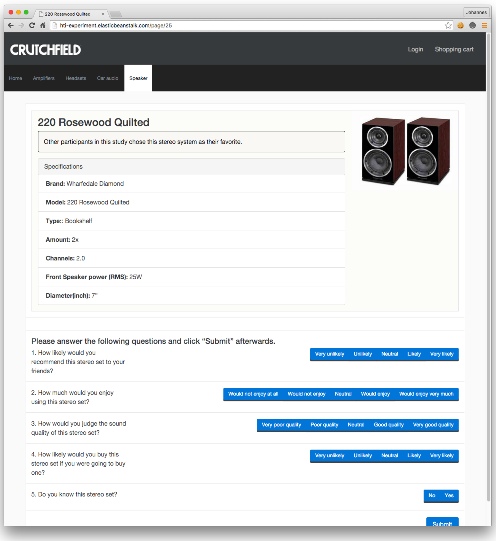
Front Speaker power (RMS): 25W

Diameter(inch): 7"

Please answer the following questions and click "Submit" afterwards.

1. How likely would you recommend this stereo set to your friends?
2. How much would you enjoy using this stereo set?
3. How would you judge the sound quality of this stereo set?
4. How likely would you buy this stereo set if you were going to buy one?
5. Do you know this stereo set?

Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit


220 Rosewood Quilted
Johannes
hti-experiment.elasticbeanstalk.com/page/25
CRUTCHFIELD
Login
Shopping cart
Home
Amplifiers
Headsets
Car audio
Speaker

220 Rosewood Quilted

Other participants in this study chose this stereo system as their favorite.

Specifications

Brand: Wharfedale Diamond

Model: 220 Rosewood Quilted

Type:: Bookshelf

Amount: 2x

Channels: 2.0

Front Speaker power (RMS): 25W

Diameter(inch): 7”

Please answer the following questions and click “Submit” afterwards.

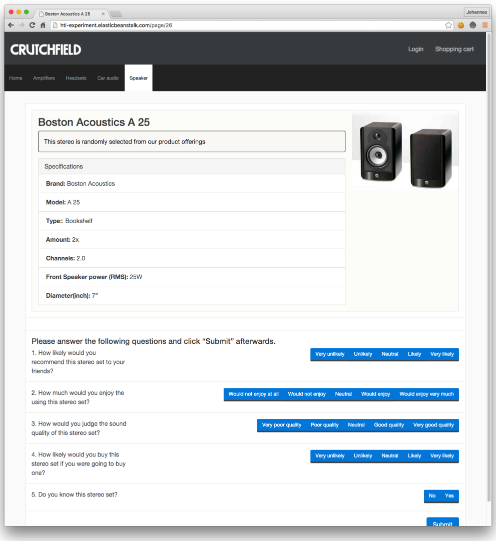
1. How likely would you recommend this stereo set to your friends?
Very unlikely
Unlikely
Neutral
Likely
Very likely

2. How much would you enjoy using this stereo set?
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much

3. How would you judge the sound quality of this stereo set?
Very poor quality
Poor quality
Neutral
Good quality
Very good quality

4. How likely would you buy this stereo set if you were going to buy one?
Very unlikely
Unlikely
Neutral
Likely
Very likely

5. Do you know this stereo set?
No
Yes
Submit


Boston Acoustics A 25
Johannes
hti-experiment.elasticbeanstalk.com/page/26
CRUTCHFIELD
Login
Shopping cart
Home
Amplifiers
Headsets
Car audio
Speaker

Boston Acoustics A 25

This stereo is randomly selected from our product offerings

Specifications

Brand: Boston Acoustics

Model: A 25

Type:: Bookshelf

Amount: 2x

Channels: 2.0

Front Speaker power (RMS): 25W

Diameter(inch): 7”

Please answer the following questions and click “Submit” afterwards.

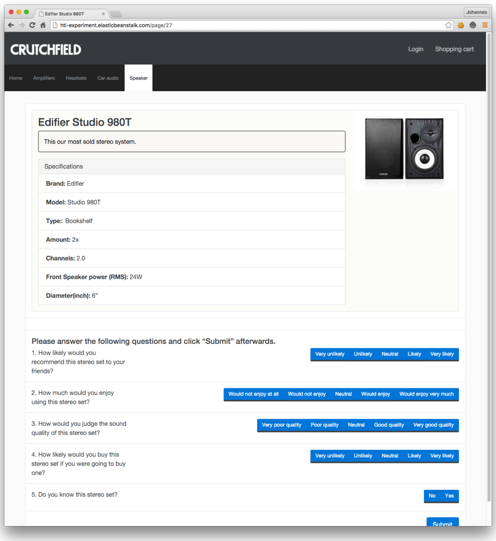
1. How likely would you recommend this stereo set to your friends?
Very unlikely
Unlikely
Neutral
Likely
Very likely

2. How much would you enjoy the using this stereo set?
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much

3. How would you judge the sound quality of this stereo set?
Very poor quality
Poor quality
Neutral
Good quality
Very good quality

4. How likely would you buy this stereo set if you were going to buy one?
Very unlikely
Unlikely
Neutral
Likely
Very likely

5. Do you know this stereo set?
No
Yes
Submit


Edifier Studio 980T
Johannes
hti-experiment.elasticbeanstalk.com/page/27
CRUTCHFIELD
Login
Shopping cart
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Amplifiers
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Car audio
Speaker

Edifier Studio 980T

This our most sold stereo system.

Specifications

Brand: Edifier

Model: Studio 980T

Type:: Bookshelf

Amount: 2x

Channels: 2.0

Front Speaker power (RMS): 24W

Diameter(inch): 6”

Please answer the following questions and click “Submit” afterwards.

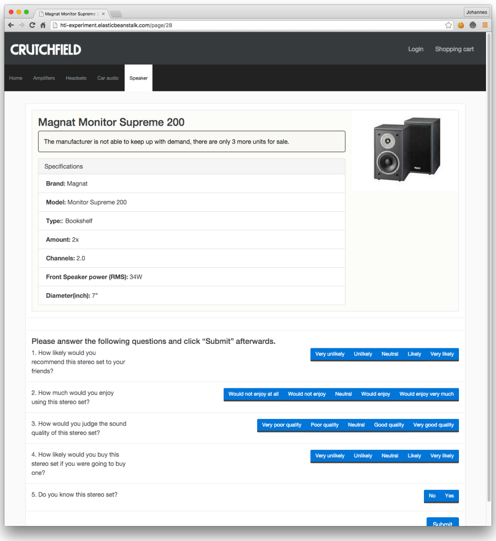
1. How likely would you recommend this stereo set to your friends?
Very unlikely
Unlikely
Neutral
Likely
Very likely

2. How much would you enjoy using this stereo set?
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much

3. How would you judge the sound quality of this stereo set?
Very poor quality
Poor quality
Neutral
Good quality
Very good quality

4. How likely would you buy this stereo set if you were going to buy one?
Very unlikely
Unlikely
Neutral
Likely
Very likely

5. Do you know this stereo set?
No
Yes
Submit


Magnat Monitor Supreme 2
Johannes
hti-experiment.elasticbeanstalk.com/page/28
CRUTCHFIELD
Login
Shopping cart
Home
Amplifiers
Headsets
Car audio
Speaker

Magnat Monitor Supreme 200

The manufacturer is not able to keep up with demand, there are only 3 more units for sale.

Specifications

Brand: Magnat

Model: Monitor Supreme 200

Type:: Bookshelf

Amount: 2x

Channels: 2.0

Front Speaker power (RMS): 34W

Diameter(inch): 7”

Please answer the following questions and click “Submit” afterwards.

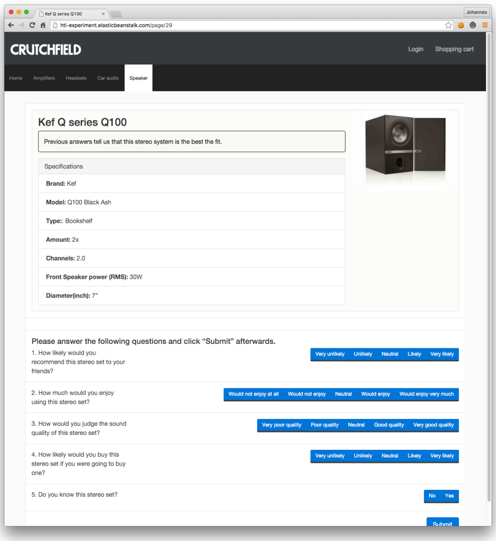
1. How likely would you recommend this stereo set to your friends?
Very unlikely
Unlikely
Neutral
Likely
Very likely

2. How much would you enjoy using this stereo set?
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much

3. How would you judge the sound quality of this stereo set?
Very poor quality
Poor quality
Neutral
Good quality
Very good quality

4. How likely would you buy this stereo set if you were going to buy one?
Very unlikely
Unlikely
Neutral
Likely
Very likely

5. Do you know this stereo set?
No
Yes
Submit


Kef Q series Q100
hti-experiment.elasticbeanstalk.com/page/29
Johannes
CRUTCHFIELD
Login
Shopping cart
Home
Amplifiers
Headsets
Car audio
Speaker
Very unlikely
Unlikely
Neutral
Likely
Very likely
Would not enjoy at all
Would not enjoy
Neutral
Would enjoy
Would enjoy very much
Very poor quality
Poor quality
Neutral
Good quality
Very good quality
Very unlikely
Unlikely
Neutral
Likely
Very likely
No
Yes
Submit

Kef Q series Q100

Previous answers tell us that this stereo system is the best the fit.

Specifications

Brand: Kef

Model: Q100 Black Ash

Type:: Bookshelf

Amount: 2x

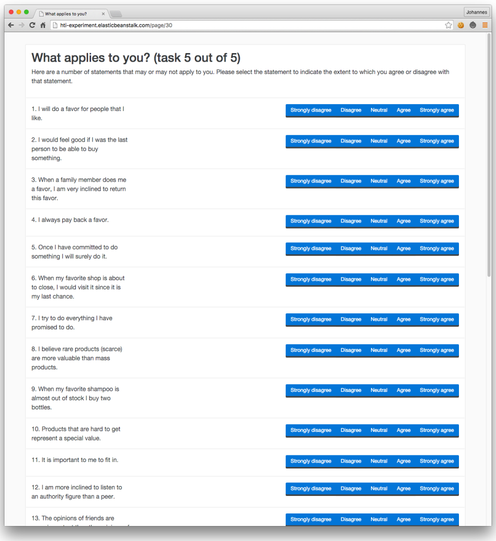
Channels: 2.0

Front Speaker power (RMS): 30W

Diameter(inch): 7”

Please answer the following questions and click “Submit” afterwards.

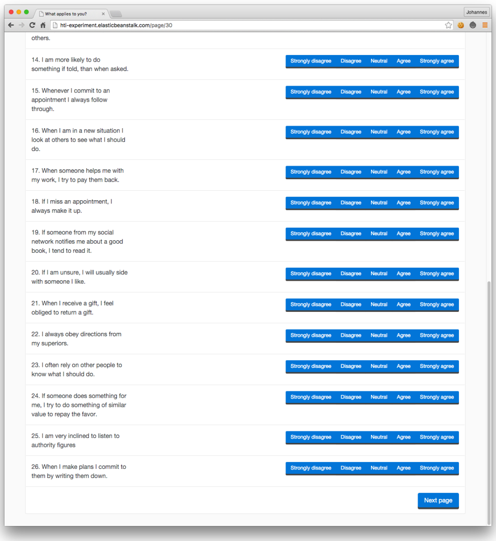
1. How likely would you recommend this stereo set to your friends?
2. How much would you enjoy using this stereo set?
3. How would you judge the sound quality of this stereo set?
4. How likely would you buy this stereo set if you were going to buy one?
5. Do you know this stereo set?


What applies to you?
hti-experiment.elasticbeanstalk.com/page/30
Johannes
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

What applies to you? (task 5 out of 5)

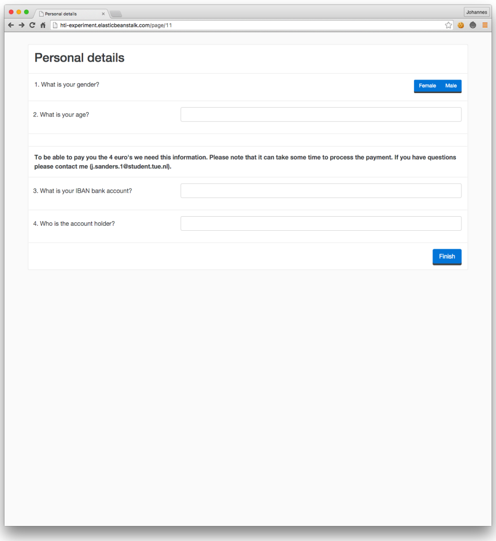
Here are a number of statements that may or may not apply to you. Please select the statement to indicate the extent to which you agree or disagree with that statement.

1. I will do a favor for people that I like.
2. I would feel good if I was the last person to be able to buy something.
3. When a family member does me a favor, I am very inclined to return this favor.
4. I always pay back a favor.
5. Once I have committed to do something I will surely do it.
6. When my favorite shop is about to close, I would visit it since it is my last chance.
7. I try to do everything I have promised to do.
8. I believe rare products (scarce) are more valuable than mass products.
9. When my favorite shampoo is almost out of stock I buy two bottles.
10. Products that are hard to get represent a special value.
11. It is important to me to fit in.
12. I am more inclined to listen to an authority figure than a peer.
13. The opinions of friends are


What applies to you?
hti-experiment.elasticbeanstalk.com/page/30
Johannes
Strongly disagree
Disagree
Neutral
Agree
Strongly agree
Next page

others.

14. I am more likely to do something if told, than when asked.
15. Whenever I commit to an appointment I always follow through.
16. When I am in a new situation I look at others to see what I should do.
17. When someone helps me with my work, I try to pay them back.
18. If I miss an appointment, I always make it up.
19. If someone from my social network notifies me about a good book, I tend to read it.
20. If I am unsure, I will usually side with someone I like.
21. When I receive a gift, I feel obliged to return a gift.
22. I always obey directions from my superiors.
23. I often rely on other people to know what I should do.
24. If someone does something for me, I try to do something of similar value to repay the favor.
25. I am very inclined to listen to authority figures
26. When I make plans I commit to them by writing them down.

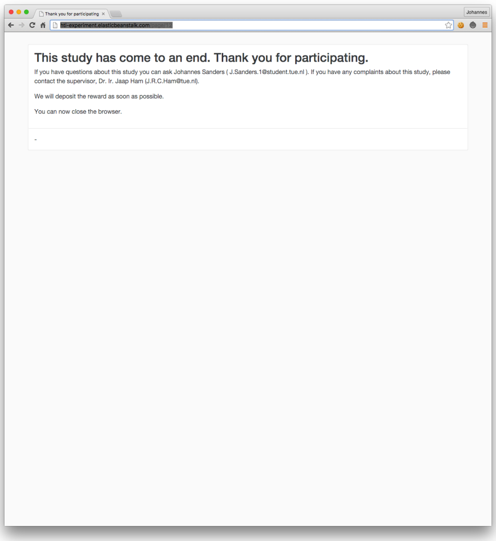

Personal details
hti-experiment.elasticbeanstalk.com/page/11
Johannes
Female
Male
Finish

Personal details

1. What is your gender?
2. What is your age?

To be able to pay you the 4 euro's we need this information. Please note that it can take some time to process the payment. If you have questions please contact me (j.sanders.1@student.tue.nl).

3. What is your IBAN bank account?
4. Who is the account holder?


Thank you for participating
Johannes
hti-experiment.elasticbeanstalk.com/page/12

This study has come to an end. Thank you for participating.

If you have questions about this study you can ask Johannes Sanders (J.Sanders.1@student.tue.nl). If you have any complaints about this study, please contact the supervisor, Dr. Ir. Jaap Ham (J.R.C.Ham@tue.nl).

We will deposit the reward as soon as possible.

You can now close the browser.

-

Appendix C

STPS questionnaire

Kaptein, M., Ruyter, B., Markopoulos, P., Aarts, E. (2012). Adaptive Persuasive Systems: A Study of Tailored Persuasive Text Messages to Reduce Snacking. ACM Transactions on Interactive Intelligent Systems, 2(2), 1025.

What applies to you?
Here are a number of statements that may or may not apply to you. Please select the statement to indicate the extent to which you agree or disagree with that statement.

1. I will do a favor for people that I like.
2. I would feel good if I was the last person to be able to buy something.
3. When a family member does me a favor, I am very inclined to return this favor.
4. I always pay back a favor.
5. Once I have committed to do something I will surely do it.
6. When my favorite shop is about to close, I would visit it since it is my last chance.
7. I try to do everything I have promised to do.
8. I believe rare products (scarce) are more valuable than mass products.
9. When my favorite shampoo is almost out of stock I buy two bottles.
10. Products that are hard to get represent a special value.
11. It is important to me to fit in.
12. I am more inclined to listen to an authority figure than a peer.
13. The opinions of friends are more important than the opinions of others.
14. I am more likely to do something if told, than when asked.
15. Whenever I commit to an appointment I always follow through.
16. When I am in a new situation I look at others to see what I should do.
17. When someone helps me with my work, I try to pay them back.
18. If I miss an appointment, I always make it up.
19. If someone from my social network notifies me about a good book, I tend to read it.

20. If I am unsure, I will usually side with someone I like.
21. When I receive a gift, I feel obliged to return a gift.
22. I always obey directions from my superiors.
23. I often rely on other people to know what I should do.
24. If someone does something for me, I try to do something of similar value to repay the favor.
25. I am very inclined to listen to authority figures
26. When I make plans I commit to them by writing them down.

Reciprocity: 3, 4, 24, 21, 17
Scarcity: 8, 6, 2, 9, 10
Authority: 25, 22, 12, 14
Commitment and consistency: 15, 7, 26, 5, 18
Social proof: 19, 16, 23, 11
Liking: 1, 13, 20