

A Work Project, presented as part of the requirements for the Award of a Master's degree in Management from the Nova School of Business and Economics.

THE IMPACT OF DESIGN AESTHETICS ON WILLINGNESS TO PAY FOR
UTILITARIAN PRODUCTS

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Abstract

In a world that is coined by fierce competition and a fast-paced life, companies need to think one step ahead of their competitors to succeed in the long-run. One growing driver for success has been the design of products (aesthetics) which can help to differentiate one's products from others that contain the same core features. For a long time in research the importance of design appeal was only assumed for pleasure-related products (hedonic) and functional products (utilitarian) were often not taken into consideration. This leaves a gap of research focusing on utilitarian products which therefore built the foundation of this study. Using Hayes' mediation model, insights into the relationship between design appeal and willingness to pay for utilitarian products were provided. This quantitative study revealed the significance of design appeal in utilitarian products that triggers higher willingness to pay. Furthermore, the objective was to get insights into the black box in consumer decision making processes. The literature review demonstrated an importance of status-seeking, self-expression and self-esteem enhancement in terms of buying decisions. These three emotional purchase motivations (mediators) were assumed to be impacting willingness to pay. Against the initial assumption, the study found that the relationship between design appeal and willingness to pay is not mediated by these three emotional purchase motivations.

KEYWORDS: Design appeal, Willingness to pay, Hayes mediation model, Utilitarian products

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1 Introduction

In the last three decades the competition among companies has been increasing tremendously. In order to succeed under these circumstances, companies invested a lot in research and development to understand their customers and build new products according to their needs. Besides using cutting-edge technology to improve the functional value of a product, the role of design (product aesthetics) for brand success and loyalty was also questioned and analyzed in many industries. Many findings show that a well-designed product can achieve a sustainable competitive advantage for companies and create long-term brand loyalty among customers (Noble and Kumar, 2010). Moreover, some studies have confirmed that the product design can significantly influence both cognitive and affective product responses which leads to attitudinal brand loyalty as well as behavioral brand loyalty (Chia-Lin Hsu et al., 2017).

After acknowledging the importance of product design (visual appeal of the product) for new product development processes, some researchers focused on the comparison of two different product categories, namely hedonic products and utilitarian products. As studies had pointed out previously, hedonic and utilitarian products were bought to achieve different goals. Therefore, hedonic products fulfill more pleasure-related goals whereas utilitarian products are usually bought to fulfill functional needs (Klein and Melnyk, 2014). These differences led to the broad perception that the role of design was more important for pleasure-related products (hedonic) than it was for products which are mainly bought because of their function (utilitarian). However, some early findings emphasized for both hedonic and utilitarian products the importance of design and therefore implied a potential for higher product performance. These findings pointed out that especially products for human interaction including many touchpoints with the consumer are emerging as marketing success drivers. This is mainly due to a smaller technology gap between companies and the rising importance of other product features (Veryzer et al., 1995). In addition, some investigations in the automotive

industry have proven that atypical product design (design that is not expected by consumers; e.g. high level of design in utilitarian products) can improve the perceived value of products when the consumer is often exposed to the product (Landwehr, Wentzel and Herrmann, 2013). But not only studies in the automotive industry have found evidence for a shift in the customers' decision-making process. Oftentimes, competitive factors of a product such as price and quality have been either replaced or complemented by product design (for both hedonic and utilitarian products). Many companies such as Apple, Kartell and Alessi have experienced that if a product's design is not only perceived as atypical but rather seen as innovative and novel, consumer demand increases and the product is often superior to similar ones (Moon, Park and Kim, 2014). Although there is some research pointing towards product design and how it can influence consumer behavior, most research addresses only hedonic products which leaves a gap for utilitarian products. Against this background, the present study aims to explore the relevance of design appeal in utilitarian products and specifically how design appeal impacts willingness to pay.

2 Literature Review

2.1 Definitions & Research Importance

In order to understand the role of design in utilitarian products, the literature review references to papers in the area of Consumer Behavior and Product Development. Apart from defining some relevant key terms, the review is meant to build a foundation for the following research objectives and the hypotheses formulation. In particular, it shall provide insights into the importance of visual product appearance in decision making processes and shall build an understanding of how emotional motivations influence buying decisions.

According to the Salem Press Encyclopedia (2020), "Product Design" is an early process of product development in which new products are constructed before they are introduced to the market (Woodbury, 2020). Other books and journals emphasize that product design has

different components and use cases ranging from visual appearance to design for cost reduction to design for environmental friendliness (Baxter, 1995). In the present master thesis, the study only addresses the visual appearance (aesthetics) of products instead of a complete coverage of all design aspects.

Taking into account the visual appearance of products as well as the subsequent influence on the consumer buying decision, many papers point out differences between two fundamental product types. When consumers look for new products, they either base their final decision on emotional or on rational reasoning. With regards to *hedonic products*, customers seek to generate emotional arousal which can be triggered by aesthetics, symbolic meaning or multi-sensory experiences (Lim and Ang, 2008). On the contrary, *utilitarian products* are bought because of their rational appeal and their functionality to complete a task or solve a problem. However, there is usually very few products that are only hedonic or only utilitarian. In most cases the product is partly hedonic and partly utilitarian (Lim and Ang, 2008). To further identify to what extent a product is hedonic or utilitarian, researchers commonly use an item scale developed by Kevin Voss, Eric Spangenberg and Bianca Grohmann (2003). The scale includes several antonyms and helps to indicate how utilitarian or hedonic a product is (Appendix A). The scale visualizes that a product (such as a toolset) can have both utilitarian characteristics and hedonic characteristics at the same time (i.e. “functional” and at the same time “amusing”). Being able to identify the product type is often crucial to determine the specific field of a study and to verify the research suitability of certain products.

Another area of research focuses on understanding how the design appeal of a product influences the willingness to pay among consumers. One example to highlight the importance of visual appearance was a study in the food industry in 2014. In this study researchers found that consumers who like the packaging of groceries actually perceived food as high-quality and assumed the food to taste better. As a result, it was shown that consumers were willing to pay

more for well-designed food products as opposed to a plain design. In particular, these visual cues led to an increase in willingness to pay by 14-121% (Wansink et al., 2014). A similar result was found in another study addressing new service development in new technology-based firms. In this case, the researchers analyzed the importance of service aesthetics for young technology-based companies (e.g. user interface, customer experiences, marketing materials etc.). Aesthetics were found to be crucial for many new service development processes and had a high positive impact on new customer sales as well as on customers' willingness to pay (Candi, 2010). A third study analyzed the relationship between product aesthetics and price sensitivity. This study didn't focus on any specific product category but on the general impact of visual appeal on price sensitivity. According to the results, when a product is perceived as well-designed, consumers are less sensitive in terms of pricing and therefore are willing to pay more for products or services (Mumcu and Kimzan, 2015).

The findings of these studies show the importance of design appeal in terms of consumer decision-making which subsequently carries a high potential for companies to elaborate their product development processes. Striking was that most papers in this research field take only hedonic products into account which leaves a lack of data for utilitarian products. One reason for this gap could be that design has a stronger connection to the emotional arousal (hedonism) of a consumer than to the functional appeal (utilitarianism) which could lead researchers to select hedonic products for their investigations (Guerreiro et al., 2015).

In addition, another research gap was found in the field of understanding why design matters. Only a few studies in the luxury goods market started to address the emotional motivation for buying well-designed products. In luxury goods, a strong emotional attachment to the product was found (So et al., 2013). This attachment is often due to the fulfillment of emotional needs such as status-seeking, self-expression or improving one's self-esteem (Zhou et al., 2002; Noh et al., 2014). To further understand the relevance of these three parameters, it is crucial to gain

insights into definitions and research findings related to seeking status, expressing oneself or looking for self-esteem in the context of consumer behavior.

Status-Seeking. Over the last decades, product consumption in order to seek status was commonly referred to as status consumption in many studies. According to Paurav Shukla (2008) status consumption is related to consumer behavior that is impacted by the need to enhance one's status through the purchase of a new product or service. The perceived value of the product is individually measured by how much status the consumer can gain by buying the product or service. Oftentimes, consumers buy expensive products to demonstrate achievement and success rather than buying products only for their technical purpose (Shukla, 2008). Moreover, some consumers buy new products to pretend the belonging to a certain social group and find acceptance in this group as a result. This indicates that as part of gaining social status, consumers are likely to pay more for a product or service. (Hennig-Thurau et al., 2004).

Self-Expression. Early on in 1988, a study revealed that consumers see their belongings as part of themselves and therefore purchases are often aligned with individual character traits and values (Belk, 1988). In addition, studies showed that certain activities including sports and healthy consumption have helped consumers to express their inner self-concepts to the outside (Hackley and Tiwsakul, 2006). Especially older papers showed that self-expression purchases often served to influence the behavior of others (Engel et al., 1969). Against these early assumptions, in 2013 Christina Saenger and her research colleagues found new intentions for self-expression through product purchases. According to their findings, consumption-focused self-expression is often due to the desire to be heard and simply express who the consumer is. In that sense, these consumers don't want to enhance brand performances but rather attract attention to themselves (Saenger et al., 2013). Having the ability to express their personality through certain products can help to fulfill consumers' emotional needs, and thus may lead to a higher willingness-to-pay.

Self-Esteem Enhancement. In the very beginnings of self-esteem research, Rosenberg described self-esteem as the intention to seek experiences which improve or protect one's self-concept (Rosenberg, 1979). Later on, some studies collected data about self-esteem in the context of buying new products. Studies found that the result of the aforementioned status-consumption and self-expression consumption is improved self-esteem. Products and services do often function as symbols of social distinction (status-seeking) uniqueness (self-expression) and also as symbols of autonomy. Often, these emotional needs are ultimately related to the maintenance and improvement of self-esteem (Banister and Hogg, 2003). As a result, seeking for status and self-expression through purchases is partly based on the need to enhance self-esteem. In this sense, consumers evaluate subconsciously what confidence-level boost they can gain from certain products and services. These evaluations can vary between consumers, so that some consumers perceive the same product as helpful to achieve self-esteem and others don't see the value for achieving self-esteem. If consumers value the self-esteem increase as high, they are willing to spend more money on certain products or services (Banister and Hogg, 2003).

Taking into account all presented study findings, it was striking that no matter what products and services consumers purchase, the final decision is often related to a craving for fulfilling an emotional need. Looking back to the beginning of the literature review, the visual appearance of a product or service was proven to be a crucial component in decision making processes. Linking these findings to the emotional motivation parameters (status-seeking, self-expression and self-esteem enhancement) indicates a great research opportunity that can help to understand why consumers are delighted by product aesthetics. Moreover, a gap of research focusing on utilitarian products in this field was discovered which shall be closed throughout the present study. The literature review and its findings shall build the foundation for the following research objective and hypotheses formulation.

2.2 Research Objective and Hypothesis Formulation

It was highlighted in the literature review, that there is still a gap between utilitarianism-focused research and hedonism-focused research in the context of the importance of design appeal. As most of the previous studies addressed hedonic products, the overall research objective is to get insights about willingness to pay related to the product design of utilitarian products. Moreover, this thesis shall provide an analysis of the emotional motivation when buying well-designed utilitarian products. The study of the emotional motivation is limited to status-seeking, self-expression and self-esteem enhancement, as these parameters were proven to be relevant in the context of decision-making processes (see chapter 2.1). The main focus of the data analysis section is to support or reject the following hypotheses by using a well-known mediation model by Hayes and Preacher (2008):

Figure 1: Hypotheses Formulation

H1: "Design appeal increases willingness to pay for utilitarian products."
H2: "Status-Seeking mediates the relationship between design appeal and willingness-to-pay."
H3: "Self-Expression mediates the relationship between design appeal and willingness-to-pay."
H4: "Self-Esteem enhancement mediates the relationship between design appeal and willingness-to-pay."

The following chapter will provide an overview of how the study was conducted. In particular, the detailed research approach and research design will be shown to see how data was collected and analyzed. As part of this, the used mediation model by Hayes and Preacher (2008) will be explained. In the end of this study, a discussion section will provide an overview of which hypotheses were proven to be true and which were proven to be false. Based on the findings and the discussion section, managerial and academical implications shall be provided as well as a section on limitations and further outlook of this research field.

3 Methodology

3.1 Research Approach

Figure 2: Research Approach (Saunders, Lewis & Thornhill, 2019)

	Process Step	Description
Research Philosophy	<i>Positivism:</i> Involvement of existing theories to develop a hypothesis which is tested during the study	Testing research that shows a positive correlation between design appeal and willingness to pay for utilitarian products through hypothesis verification
Theory Development	<i>Deductive research approach:</i> Exploration of causal relationship between variables	Making use of the common Mediation Model to identify a correlation between design and willingness to pay in utilitarian products
Research Purpose	Collecting new insights through <i>information gathering</i> in an <i>exploratory way</i> due to insufficient research evidence	Adding knowledge to the insufficiently researched topic of product design in utilitarian products
Research Strategy	<i>Survey approach</i> with participants demonstrating their own preferences through quantitative research. Researcher is detached which leads to unbiased analysis	Following an unbiased analysis strategy of a large data set to investigate “how many” people are willing to pay more for well-designed utilitarian products
Methodological Choice	<i>Mono method approach, Quantitative research design</i>	Single, quantitative data collection method
Time Horizon	<i>Cross-sectional:</i> study of cross-individual preferences at one given point of time	Studying the value of design across many different individuals at the same time
Data Collection	<i>Primary sources, Structured online questionnaire</i>	Using Qualtrics to distribute an online questionnaire with the same structured question view for all participants

3.2 Research Study Design

The research design was split into two parts, namely a pre-study and a main study, to ensure high quality of the findings. Prior to the main study, a pre-study was done in order to get insights about three different product categories and validate their importance for the purpose of the

main study. In addition, the pre-study helped to improve the research approach in the main study by avoiding common mistakes using online-survey software. Both studies were conducted through an online survey using “Qualtrics” as a data collection tool and SPSS (IBM) to analyze data.

Pre-Study. In preparation for the pre-study, three utilitarian product categories had to be selected as foundation for the pre-study and main study. Based on academical sources, three product categories (printers, toolsets and textbooks) were assumed to be utilitarian and thus a good fit for the purpose of this study (Lu et al., 2016 and Lee et al., 2016). In order to validate their level of utilitarianism, the pre-study took use of the aforementioned utilitarian and hedonic item scale by Voss et al (2003). Even though this scale is already well-established, Cronbach’s alpha was calculated to ensure the scale’s reliability.

The sample set consisted of 30 respondent and was split into 60% male and 40% female (see Appendix F). Using the utilitarian/hedonic item scale, all 30 participants had to evaluate the utilitarian and hedonic nature of each product category (printers, toolsets, textbooks). In particular, several key attributes (see item scale in Appendix A) such as usefulness and cheerfulness were rated on a scale from 1 to 5 for each product. Afterwards, means were calculated and compared to the other means across all three categories.

Main Study. To ensure the validity of the selected product categories, Voss’s item scale was used again to reassess the utilitarian nature of each product. Afterwards the main study helped to analyze the relationship between design appeal and willingness to pay.

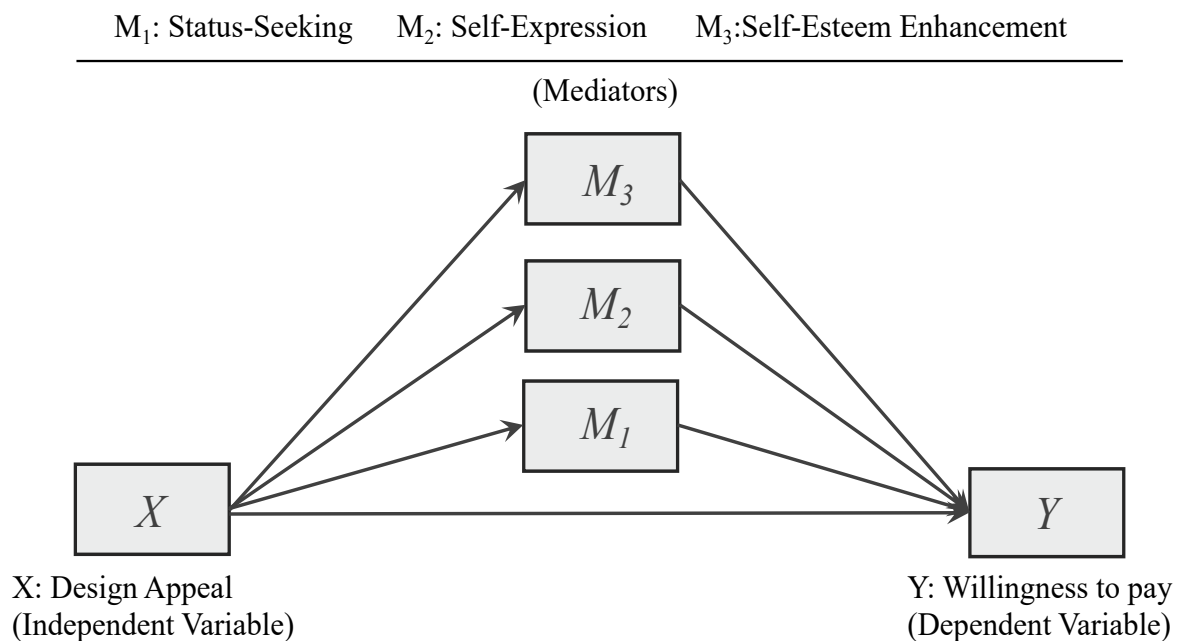
In the first step of the data collection, the aim was to investigate the direct relationship between design and willingness to pay for utilitarian products. To do so, the utilitarian product categories (textbooks, printers, toolsets) were randomly assigned to all participants. Participants saw only one product picture in the beginning of the survey that showed either a textbook, printer or toolset. In addition, the pictures visualized different levels of aesthetics, ranging from good

design to bad design (e.g. first participant might see a printer with good design and the second might see a toolset with bad design). The reason for choosing different products with varying degrees of aesthetics was to have great variance in aesthetics so that the findings are not dependent on one specific product category but cover generally the utilitarian product type. With this approach it was possible to measure the differences in product design appeal and the corresponding willingness to pay (see Appendix E for full survey).

The following step helped to find out whether consumers make purchase decisions based on status-seeking, self-expression or self-esteem enhancement. A commonly used questionnaire for status-seeking consumption was built and validated by Eastman, Goldsmith and Flynn in 1999 (see Appendix B). The scale includes 5 questions regarding status-seeking when buying a new product. In terms of self-expression, a modern evaluation scale was developed in 2013 by Saenger, Thomas and Johnson (see Appendix C). The scale consists of 6 questions which help to understand self-expression intentions in consumer buying decisions. With regards to self-esteem enhancement, there is currently much research that shows a strong correlation between low self-esteem and compensatory consumption. However, up until now, there is no popular and validated scale to assess self-esteem enhancement through product acquisition. Therefore, 5 questions were developed which are based on Rosenberg's self-esteem scale (Rosenberg, 1965), but put in the context of a purchase situation (see Appendix D).

Using these scales can often help to understand more about the black box (the "why") in decision making processes. And as a result, researchers have the ability to use the responses as input for the commonly used mediation model by Preacher and Hayes (2004). This mediation model can help to determine if a potential mediator (i.e. status seeking, self-esteem enhancement or self-expression) is indirectly part of the relationship between an independent and dependent variable. Figure 3 shows the mediation Model 4 including the topic of the present study (Preacher and Hayes, 2004).

Figure 3: Mediation Model by Preacher and Hayes (2004) applied on current topic



To clarify, this framework helps to understand whether the dependent variable (Y) is caused directly by the independent variable (X) or mediated by the mediator (M). If Y is mediated by M, that implies that X causes M and as a result M causes Y (Preacher and Hayes, 2004). In addition, a covariate (price sensitivity) was used as a control measure.

The data set consisted of 145 participants in total of which 64% were female and 36% were male. With 71%, most respondents were 20-25 years old, followed by 19% at the age of 26-30, 7% at the age of 30-50 and 3% which were older than 50. Looking at the educational degree, 44% were holding a bachelor's degree and 39% were holding a master's degree, 14% had successfully finished high school, followed by 1% with a PhD (see Appendix H). A mixed sample group was chosen to ensure a result validity across many consumers with varying backgrounds.

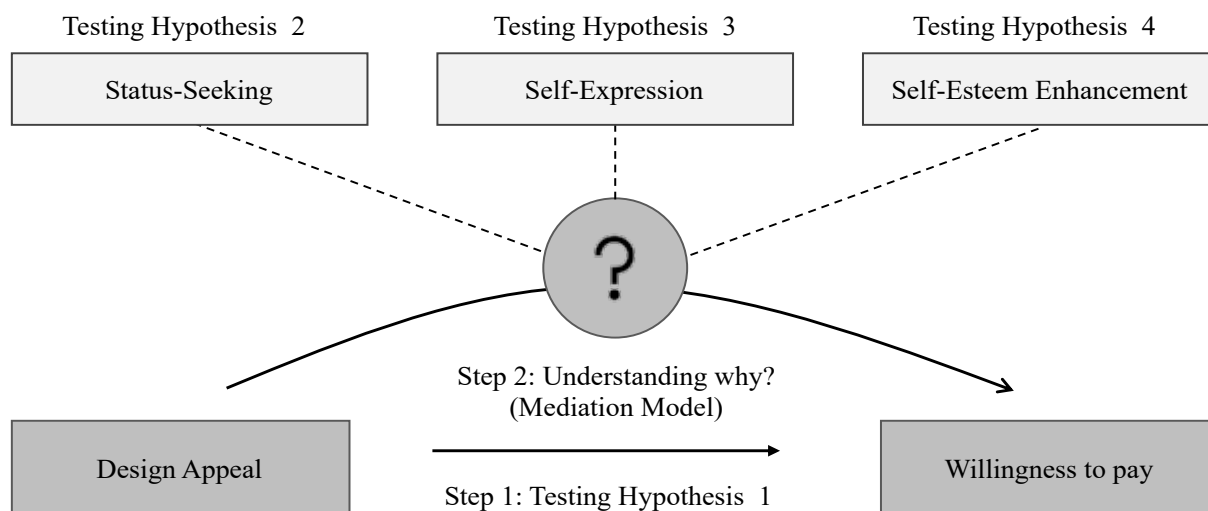
4 Results and Analysis

4.1 Data Analysis

The main tool for analyzing the data sample was SPSS by IBM. Referring to the chapter of “research study design”, the findings of the pre-study were analyzed prior to the main study to assess how utilitarian the selected product categories are (printers, toolsets, textbooks). After analyzing these results, the main study was conducted accordingly.

In the first step of the main study a reassessment of the product categories was conducted to back-up the results of the pre-study and qualify the product categories for the purpose of this research. Afterwards, a data analysis framework was developed in order to accept or reject the hypotheses (see chapter 2.2) and validate their significance. The framework serves as a guide through all steps of the mediation analysis (see Figure 4). Using this framework was helpful to determine whether a hypothesis was rejected or supported.

Figure 4: Data Analysis Framework



Following the data analysis framework above, the first step was to highlight if design appeal (independent variable X) is a significant predictor of willingness to pay (dependent variable Y). This was done to validate hypothesis 1. Afterwards, the emotional purchase motivation

(mediators) were tested as one coherent third variable (see Figure 3, “M1-M3”) to see if they simultaneously mediate the relationship between design appeal and willingness to pay. Moreover, the mediation model was run with all three potential mediators individually to see how the relationship between design appeal and willingness to pay is impacted by each mediator alone. These results helped to validate the hypotheses 2-4. To clarify, the mediation model was used to see if a higher level of design indirectly triggers the emotional purchase motivation which then accounts for an increase in willingness to pay.

4.2 Findings Pre-Study

The main purpose of the pre-study was to serve as indicator whether the chosen product categories, namely printers, toolsets and textbooks, are perceived as utilitarian rather than hedonic. This was done to ensure that the selected categories can bring valuable insights for the purpose of the main study. The findings reassured the assumption that printers, toolsets and textbooks are indeed seen as utilitarian products. Moreover, all three categories scored higher on utilitarian attributes than on hedonic ones, which supports the utilitarian perception. For printers, an overall utilitarian score of 3.7 (maximum possible value 5) was found in contrast to a hedonic score of 2.54. This accounts for a difference of 1.16 scoring points. The biggest difference between utilitarian and hedonic values was found in the toolset category, in which respondents clearly stated that toolsets are seen as utilitarian products with a score of 4.76 as opposed to a hedonic a score of 2.94. This amounts to a difference of 1.82 scoring points. The third product category also showed a big difference ranging from 3.68 (utilitarian score) to 2.02 (hedonic score). Therefore, the difference was 1.66 (see Appendix G). To ensure the reliability of these findings, Cronbach’s alpha for this scale was found to be 0.883 (utilitarian items) and 0.749 (hedonic items). Alphas between 0.7 and 0.9 indicate high reliability (see Appendix N).

4.3 Findings Main Study

4.3.1 Reassessment of the Utilitarian Value

As pointed out in the data analysis section, before Hayes' mediation model was applied, the findings regarding the utilitarian and hedonic value of each category were reassessed to verify the eligibility of each product category. Again, the verification was done using the Voss et al (2003) scale, which helped to indicate how utilitarian or hedonic an individual perceived the product category. Similar to the findings of the pre-study, all 3 product categories were seen as rather utilitarian than hedonic. For the printer category we found an overall utilitarian score of 3.85 (maximum possible value 5) in comparison to a hedonic score of 2.44. That yields a point difference of 1.41. Even more striking was the difference for toolsets, among which I found an overall utilitarian score of 4.16 (maximum possible value 5) whereas the hedonic score was on average 2.55. Thus, I recorded a difference of 1.61. The smallest difference was found for the textbook category. For textbooks I found an average utilitarian score of 3.80 in contrast to a hedonic score of 2.57. In this case the difference amounts to 1.23 (See Appendix I). To back up these findings, Cronbach's alpha for scale reliability was found to be 0.817 (utilitarian items) and 0.812 (hedonic items). After validating the product eligibility, the analysis proceeded with Hayes' mediation model to explore emotional purchase motivation.

4.3.2 Hayes' Mediation Model

Before going into the mediation model, the levels of design (given by the researcher) were compared with design appeal perceived by the participants (see Appendix E – Block 4). A match was found between the given design level and perceived design appeal of respondents across all categories, confirming the presence of various design levels in all product categories (see values in Appendix J). In other words, whenever a person saw a low level of design (i.e. low design level textbook) their appeal perception was lower than the value people assigned to better designed products (i.e. high design level textbook). The answer given in this part of the

survey (design appeal) was used as the independent variable throughout the mediation analysis. For further analysis, this variable was used as a continuous value instead of separating design levels into categories in order to ensure standardization for the entire sample.

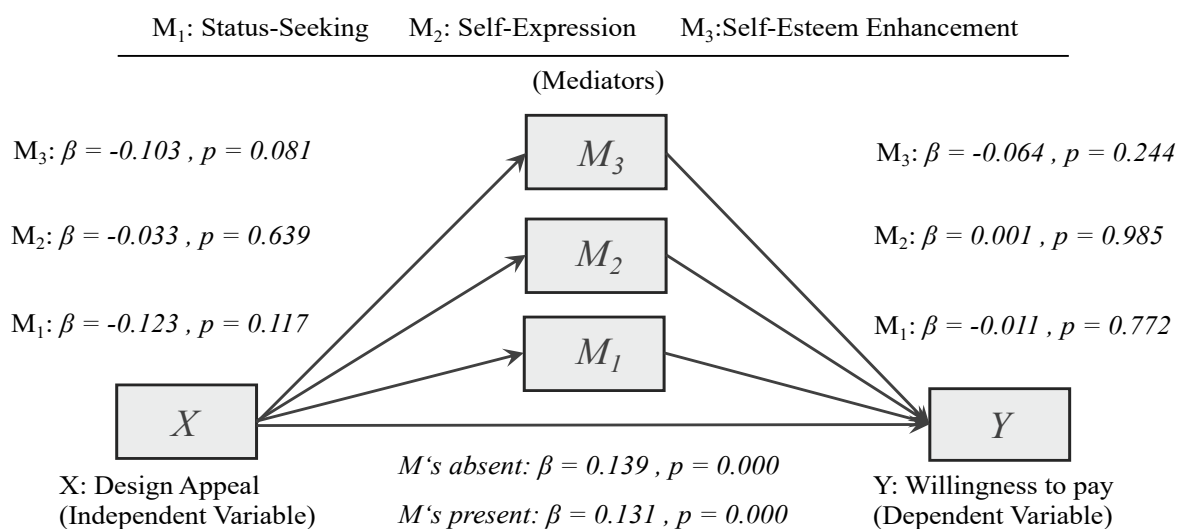
Following, Hayes' mediation model 4 was applied to test the significance of the relationship between design appeal and willingness to pay. In addition, the mediation model was used for analyzing the impact of potential mediators between the independent variable (design appeal) and dependent variable (willingness to pay). To clarify, a mediator is a third variable in a relationship that is usually triggered by the independent variable, and subsequently indirectly impacts the outcome of the dependent variable. Regarding the present study, the mediation model was used to see if a high level of design appeal predicts emotional motivation (e.g. status seeking) and as a result the emotional motivation causes a higher willingness to pay. The analysis was run 4 times in which 3 different mediators (status-seeking, self-esteem enhancement and self-expression) were tested simultaneously and separately. The covariate (price sensitivity) served as a control measure to deny the possibility that the findings were driven by a sample set with only price sensitive respondents. According to Hayes' literature (2013), the important values that eventually determine the effect of the mediators are the coefficient (b) and the p-value that shows the significance of a relationship. In addition, it is necessary to report the confidence interval (CI) in the end.

Mediators Simultaneously (M1+M2+M3). In the beginning of the analysis, Hayes' model 4 was used with all 3 mediators simultaneously to understand if an overall emotional purchase motivation mediates the relationship between design appeal and willingness to pay.

Firstly, the direct relationship between design appeal and willingness to pay in the absence of the three mediators was analyzed (X predicting Y). A coefficient of 0.14 and a p-value of 0.00 were found in the absence of all mediators. In the next step, the impact of design appeal on each mediator was investigated. This step included each relationship individually (i.e. X to M1, X to

M2, X to M3) and therefore 3 pairs of coefficients and p-values were found which are shown on the left side in Figure 5. In the third step, each mediator was put in relation to the dependent variable Y (willingness to pay). The beta's and p-values can be found on the right side in Figure 5. All 6 p-values seen on the left and right side in Figure 5 indicate that these paths are not significant (above 0.05). In the fourth step, the relationship between design appeal and willingness to pay in the presence of all mediators were analyzed. A beta of 0.13 (in %) and a p-value of 0.00 was found (bottom values Figure 5), which demonstrates a small reduction of the coefficient (0.139 to 0.131) compared to the case where the mediators were absent.

Figure 5: Mediation Model by Preacher and Hayes (2004): Findings – Several Mediators



In terms of the covariate, a beta of 0.06 and a p-value of 0.10 were found. As a result, whenever the price sensitivity of a consumer goes up by one unit, the willingness to pay also increases by 6%. The p-value of 0.10 highlights that this relationship is slightly not significant ($p = 0.10$ is slightly above 0.05). The confidence interval for the total indirect effect of this relationship was found to range from -0.006 to 0.026, which suggests that there is no mediation happening when taking into account all mediators at the same time (see Appendix M). As these findings didn't show a significance, the same model was used for each mediator separately to find out if one of the mediators cannibalizes the greater effect of the other two.

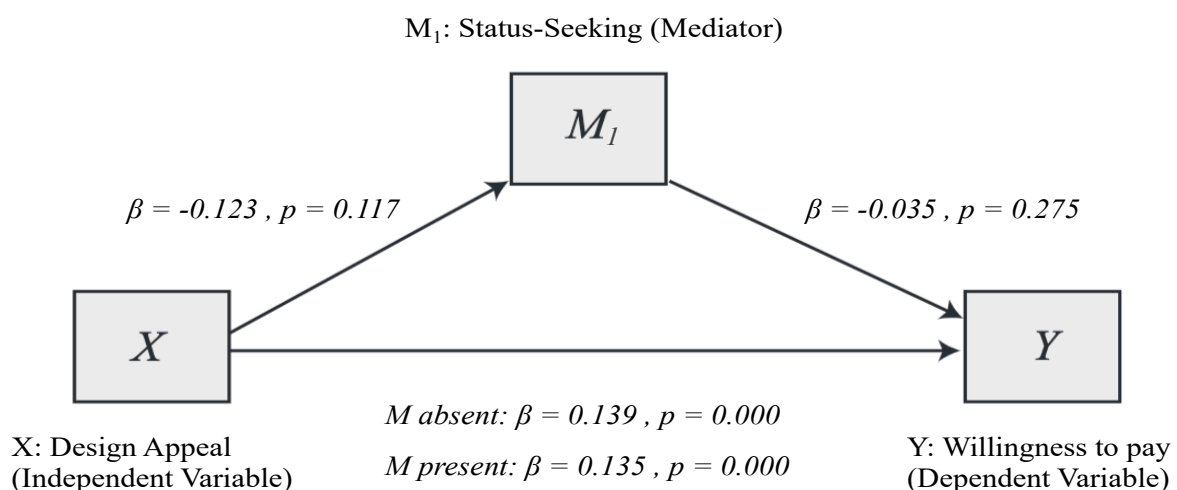
Status-Seeking (MI). At first, status-seeking as a potential single mediator was analyzed to understand if a high level of design appeal evokes the feeling of seeking status and indirectly causes a higher willingness to pay.

The first step addressed the direct impact of the independent variable (design appeal) on the dependent variable (willingness to pay) in the absence of the mediator (status seeking). Here, a beta of 0.14 (in %) and a p-value of 0.00 was found. Thus, design appeal is a significant predictor ($p = 0.00$) of willingness to pay without taking into account the mediator. The b-value shows that for each one-unit increase of design appeal, the willingness to pay increases by 14%. The second step of Hayes' analysis contains the relationship between the independent variable and the mediator (X predicting M). In the case of design appeal predicting status-seeking, a coefficient of -0.12 and a p-value of 0.12 was found. In other words, for every one-unit increase in design appeal, status-seeking decreases by 0.12 units. However, as the p-value (0.12) implies, this relationship is not significant (p-value above 0.05) across the sample and therefore design appeal is not a significant predictor of the feeling to seek status. Following, the relationship between covariate (price sensitivity) and mediator (status-seeking) were analyzed. Here, a coefficient of 0.25 and a p-value of 0.01 was found. Meaning, for every one-unit increase in price sensitivity, status-seeking increases by 0.25 units. The low p-value (0.01) shows a significance for this relationship.

In the third and fourth step of Hayes' analysis the full model was considered which contains two paths namely the mediator predicting the dependent variable (M predicting Y) in the presence of the independent variable and the independent variable predicting the dependent variable (X predicting Y) in the presence of the mediator. In terms of the first path, a b-value of -0.04 (in %) and a p-value of 0.27 was found. Therefore, each one-unit increase in status-seeking leads to a 4% decrease in willingness to pay. The high p-value (0.27) indicates that this prediction is not significant though. Looking at the second path, a b-value of 0.13 and a p-value

of 0.00 were found. Meaning, for each one-unit increase in design appeal, the willingness to pay goes up by 13%. The low p-value (0.00) implies that this relationship is valid and design appeal is a significant predictor of willingness to pay (see Figure 65). In terms of the covariate, I found a b-value of 0.06 (in %) and a p-value of 0.09. As a result, whenever the price sensitivity of a consumer goes up by one unit, the willingness to pay also increases by 6%. However, the p-value of 0.09 shows that this relationship is not significant. In this case, it is only marginally not significant as the p-value is close to 0.05 ($p = 0.09$). Lastly, the total indirect effect which was found for the entire model including the mediator is 0.004. The confidence interval (CI) for this analysis ranges from -0.005 to 0.017. Having a confidence interval range that includes 0 is an indicator for no mediation.

Figure 6: Mediation Model by Preacher and Hayes (2004): Findings – Status-Seeking



As a result, I found that design appeal significantly predicts or impacts willingness to pay but is not mediated through status seeking. On top of that a non-significant prediction of willingness to pay through the covariate price sensitivity implies that the results are valid and not due to a high price sensitivity in my data set (see Appendix K for accurate values).

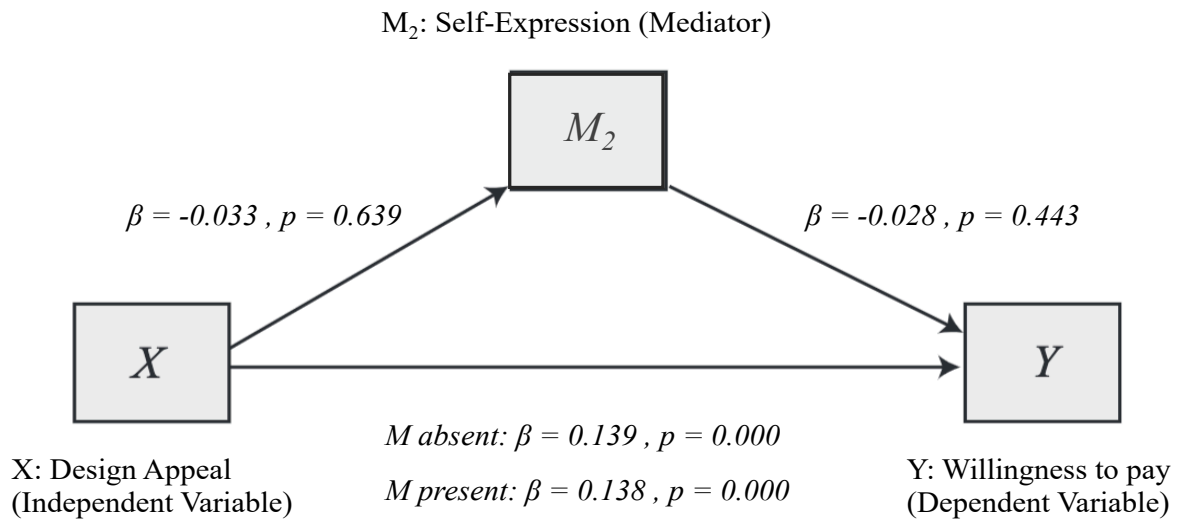
Self-Expression (M2). The same analysis was run with another mediator namely self-expression. In this case, the goal was to find out if a high level of design appeal causes the feeling of self-expression through the product purchase and thus indirectly causes a higher

willingness to pay. Again, the covariate price sensitivity was used as a control measure. As seen in the previous section, the first step of Hayes' analysis investigates the impact of the independent variable (design appeal) on the dependent variable (willingness to pay) in the absence of the mediator (self-expression). Equal to the previous Hayes' analysis, a p-value of 0.00 and a coefficient of 0.14 was found. Therefore, increasing design appeal by one unit leads to an increase of 14% in willingness to pay. As the absence of the mediator is assumed in this step, the p-value and coefficient here were expected to be the same as before (mediator is not taken into account only the direct relationship between design appeal and willingness to pay). Following, the relationship between design appeal and the need for self-expression was investigated (X predicting M). A coefficient of -0.03 was found and a p-value of 0.63. Therefore, a one-unit increase of design appeal leads to a 0.03 unit decrease of self-expression, which was shown to be non-significant though ($p = 0.63$).

In Hayes' third and fourth step, the entire model was analyzed again. Path 1, the prediction of willingness to pay (dependent variable) by self-expression in the presence of the independent variable, was found to be non-significant with a p-value of 0.44 and a coefficient of -0.03. Thus, this correlation appears to be non-significant. Path 2, which takes into account the relationship between the independent variable and the dependent variable in the presence of the mediator (M) was proven to be significant with a p-value of 0.00 and a coefficient of 0.14 (in %). Therefore, if design appeal increases by 1 unit, willingness to pay is predicted to increase by 14% (see Figure 7). For the relationship between price sensitivity (covariate) and willingness to pay (dependent variable) a coefficient of 0.06 and a p-value of 0.11 were found. As a result, the relationship is also non-significant ($p = 0.11$), meaning, price sensitivity does not predict willingness to pay in the presence of the mediator. The total indirect effect of the entire model including the mediator was 0.0009. The confidence interval (CI) from -0.006 to 0.012, which includes 0, suggested that there is no mediation happening through self-expression. The

significant prediction of willingness to pay through design appeal remains valid. Also, once again I have found a non-significant prediction of willingness to pay through the covariate price sensitivity. This implies that the results are not due to a high price sensitivity in my data set (see Appendix L for accurate values).

Figure 7: Mediation Model by Preacher and Hayes (2004): Findings – Self-Expression



Self-Esteem Enhancement (M3). As the values appear to be similar for each of the 3 tested mediators, this section will be limited to only the relevant findings. For further investigation, the detailed values can be found in Appendix M. In case of self-esteem enhancement, the analysis was meant to understand if seeking for self-esteem enhancement (mediator) mediates the relationship between design appeal (independent variable) and willingness to pay (dependent variable). The relevant findings showed that design appeal predicts willingness to pay significantly in both the presence and absence of the mediator. Also, equally to the other two tested mediators, I could not find that design appeal significantly predicts the mediator (self-esteem enhancement). To clarify, a one-unit increase of design appeal does not necessarily predict an increase or decrease in feeling the need to enhancing one's self-esteem through product purchases. In addition, a low indirect impact of 0.007 was found. Having a confidence interval from -0.003 to 0.023 testifies no mediation (see Appendix L).

5 Discussion

The findings demonstrated that a high level of design appeal is significantly responsible for higher willingness to pay. This effect was observed across several different product categories and three different design levels.

Looking back to the hypotheses, the findings could therefore support hypothesis 1. As a result, a higher level of design appeal leads to higher willingness to pay among customers when purchasing utilitarian products. Through the mediation model by Hayes, this study looked at the “why” behind the positive correlation of design appeal and willingness to pay. The tested potential mediators, namely status-seeking, self-expression and self-esteem enhancement were not identified as mediators (in simultaneous as well as in individual consideration). As a result, hypotheses 2-4 have to be rejected. One has to ask why there was no mediation through the aforementioned variables even though there is a significant positive correlation between design appeal and willingness to pay. In general, for all four investigations, a low R-squared value (see Appendix J, K, L, M) indicated that there are many other influential variables that were not included in the model but could be looked at in future studies. It is suggested that other potential mediators such as category involvement, brand loyalty, perceived product quality or product satisfaction should be analyzed with Hayes’ model to understand why design appeal causes willingness to pay.

6 Conclusion and Outlook

6.1 Managerial & Research Implications

As the literature review pointed out, the role of design in product development has become increasingly more important. Despite the intuition that design is only important for hedonic products, the present study highlighted that this assumption holds also true in terms of utilitarian products. The significant positive relationship between design appeal and willingness to pay

was verified and shall therefore provide a foundation for further product development processes. Thus, also for products which are meant to fulfill more functional needs (utilitarian products) the design component must not be underestimated and can be responsible for a competitive advantage among firms. By developing products which show a pleasant level of aesthetics, customers are willing to pay more for a product. Also, there is a chance to capture loyal customers through an increase in overall customer satisfaction. This study could not find significant proof for emotional intentions why consumers favor well-designed utilitarian products. Companies and other researchers should elaborate on the “why” and should conduct more studies in the future. This can help to be trailblazers in this field and gain a competitive advantage. Due to the evolving and changing consumer preferences, many new emotional needs arise. Companies should therefore rethink their product designs and try to address emotional arousal of their consumers.

The importance of design appeal also implies a business opportunity to establish a luxury or premium goods market for utilitarian products as luxury/premium goods are usually coined by high levels of design and trigger higher willingness to pay. The best example to support this thought is the change in the automotive industry which traditionally sold utilitarian products for transportation needs but shifted towards selling hedonic products as cars have become more joyful and exciting. Cars are also a good example to highlight how the design of a traditionally utilitarian product has become a factor to gain brand differentiation and brand superiority in many geographical markets.

6.2 Limitations and Future Outlook

In terms of the limitations, it is to say that a sample set is usually not completely representative for all consumers. The findings give an indication for companies and managers for their new product development processes but cannot cover all customers in one’s target group. Also, most participants were 20-30 years old which leaves a lack of data for older generations. Thus, it is

suggested that future research should have a closer look at older generations and their willingness to pay for well-designed utilitarian products.

Another limitation to the findings is the cross-sectional nature of the survey. A longitudinal study covering years and analyzes the behavior of the same sample at different points in time is suggested to complement current findings. Testing the same hypothesis over a longer period with several testing points can help to show if the verification of this hypothesis is only based on current consumer trends. Moreover, general limitations of studies using online questionnaires are the misunderstanding of the question. Also, surveys often put participants in unnatural situations in which they feel the need to answer in the right way instead of the most honest way. Respondents might feel exposed by showing their true self even if the questionnaire is fully anonymous. As a result, future research should complement these findings by conducting qualitative research, which can provide more accurate responses. Especially studies that investigate category involvement, brand loyalty, perceived product quality or product satisfaction can give valuable insights into this barely explored field of research.

This work project has shown that among many features, the design component comprises a high potential to sustain a competitive advantage with utilitarian products. It is recommended that companies rethink their product and design development processes to meet consumers' visual preferences. Not only can companies gain a competitive advantage in their current industry but in addition they have the chance to reshape the current market by providing premium or luxurious utilitarian products. I would like to end this study with a famous quote by Steve Jobs to point out the opportunity companies have by providing well-designed utilitarian products. "People don't know what they want until you show it to them" (Steve Jobs, 1997).

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Appendix

- A. Utilitarian & Hedonic Item Scale (Voss et al., 2003)
- B. Status-Seeking Evaluation Scale by Eastman, Goldsmith & Flynn
- C. Self-Expression Evaluation Scale by Saenger, Thomas and Johnson
- D. Self-Esteem Enhancement Evaluation based on Rosenberg
- E. Full Survey Structure (Qualtrics)
- F. Sample Composition Pre-Study
- G. Assessment of the utilitarian product value
- H. Sample Composition Main Study
- I. Reassessment of the utilitarian product value
- J. Hayes Mediation Model 4 – Status-Seeking
- K. Hayes Mediation Model 4 – Self-Esteem Enhancement
- L. Hayes Mediation Model 4 – Self-Expression
- M. Hayes Mediation Model 4 – Several Mediators
- N. Cronbach’s Alpha – UT/HED Scale Reliability

A. Utilitarian & Hedonic Item Scale (Voss et al., 2003)

Utilitarian (UT)	Hedonic (HED)
Useful/Useless	Dull/Exciting
Practical/Impractical	Not Delightful/Delightful
Necessary/Unnecessary	Not Sensuous/Sensuous
Functional/Not Functional	Not Fun/Fun
Sensible/Not Sensible	Unpleasant/Pleasant
Helpful/Unhelpful	Not Funny/Funny
Efficient/Inefficient	Not Thrilling/Thrilling
Effective/Ineffective	Not Happy/Happy
Beneficial/Harmful	Not Playful/Playful
Handy/Not Handy	Unenjoyable/Enjoyable
Productive/Unproductive	Not Cheerful/Cheerful
Problem Solving/Not Problem Solving	Not Amusing/Amusing

B. Status-Seeking Evaluation Scale by Eastman, Goldsmith & Flynn

Status Consumption Scale Items:
1. I would buy a product just because it has status.
2. I am interested in new products with status.
3. I would pay more for a product if it had status.
4. The status of a product is relevant to me. (transposed into positive version)
5. A product is more valuable to me if it has some snob appeal.

C. Self-Expression Evaluation Scale by Saenger, Thomas and Johnson

Self-Expression Scale Items:
1. I like to talk about what products and services I use so people can get to know me better.
2. I like the attention I get when I talk to people about the products and services I use.
3. I talk to people about my consumption activities to let them know more about me.
4. I like the idea that people want to learn more about me through the products and services I use.
5. I like it when people pay attention to what I say about my consumption activities.

D. Self-Esteem Enhancement Evaluation based on Rosenberg

Self-Esteem Enhancement Scale Items:
1. Buying new products helps me to be satisfied with myself.
2. Without buying new products I don't have much to be proud of.
3. Buying new products makes me feel like a person of worth.
4. Without buying new products I feel like I am no good at all.
5. Buying new products helps me to develop more respect for myself.

E. Full Survey Structure (Qualtrics) – Document Pages 29 – 43

Appendix Note: Block 2 consists of 9 different subsections (a-i). Each participant only saw one of these subsections. Randomly allocation was used through Qualtrics.

Block 1

Dear Participant,

In the following survey you will be asked different questions regarding a potential purchase. The goal of this research is to understand how consumers make buying decisions. This questionnaire is for my master's thesis as part of the Master's in Management program at Nova SBE.

There is no right or wrong answer, and I kindly ask you to answer all questions with full honesty. All answers are confidential, and they will be used only for the purpose of statistical analysis.

The survey will take approximately 7 minutes!

Thank you for your contribution and I would appreciate if you send this survey to your friends, family and colleagues.

Conducted by Maximilian Erll

In order to proceed I would like to get your consent to collect and analysis your data.

- I hereby acknowledge the above and give my voluntary consent. I confirm that I am 18 or older.
- No, I would not like to participate or am ineligible.

Appendix Note: Block 2 consists of 9 different subsections (a-i). Each participant only saw one of these subsections. Randomly allocation was used through Qualtrics.

Block 2 a (printer - low)

I would like to ask you to imagine that you are looking to buy a printer for your house.

Assume that the average price for a printer is 100€.

Below you can see the picture of a printer that would be suitable for at-home use.

You may take as much time as you need to get a visual impression of this printer.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this printer.

Block 2 b (printer - medium)

I would like to ask you to imagine that you are looking to buy a printer for your house.

Assume that the average price for a printer is 100€.

Below you can see the picture of a printer that would be suitable for at-home use.

You may take as much time as you need to get a visual impression of this printer.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this printer.

Block 2 c (printer - high)

I would like to ask you to imagine that you are looking to buy a printer for your house.

Assume that the average price for a printer is 100€.

Below you can see the picture of a printer that would be suitable for at-home use.

You may take as much time as you need to get a visual impression of this printer.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this printer.

Block 2 d (toolbox - low)

I would like to ask you to imagine that you are looking to buy a toolset for your house.

Assume that the average price for a toolset is 150€.

Below you can see pictures of a toolset that would be suitable for at-home use.

You may take as much time as you need to get a visual impression of this toolset.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this toolset.

Block 2 e (toolbox - medium)

I would like to ask you to imagine that you are looking to buy a toolset for your house.

Assume that the average price for a toolset is 150€.

Below you can see pictures of a toolset that would be suitable for at-home use.

You may take as much time as you need to get a visual impression of this toolset.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this toolset.

Block 2 f (toolbox - high)

I would like to ask you to imagine that you are looking to buy a toolset for your house.

Assume that the average price for a toolset is 150€.

Below you can see pictures of a toolset that would be suitable for at-home use.

You may take as much time as you need to get a visual impression of this toolset.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this toolset.

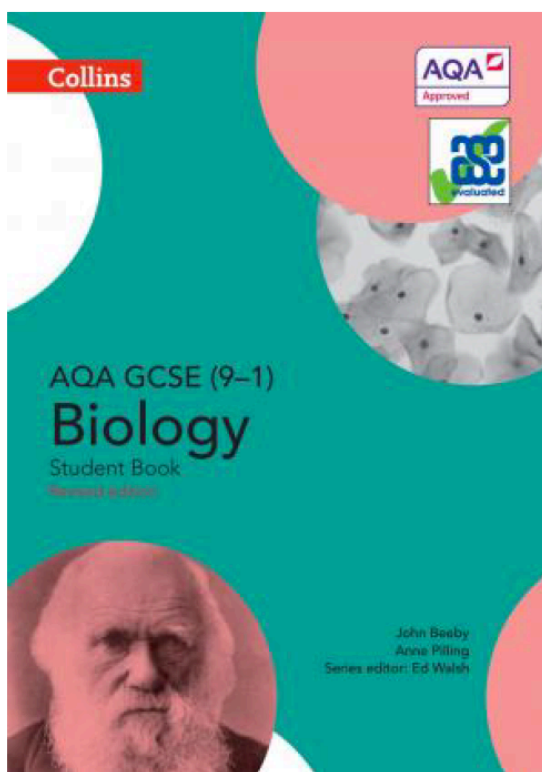
Block 2 g (textbook - low)

I would like to ask you to imagine that you are looking to buy a Biology textbook for studying.

Assume that the average price for a Biology textbook is 50€.

Below you can see a picture of a textbook that would be suitable for your study purpose.

You may take as much time as you need to get a visual impression of this textbook.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this textbook.

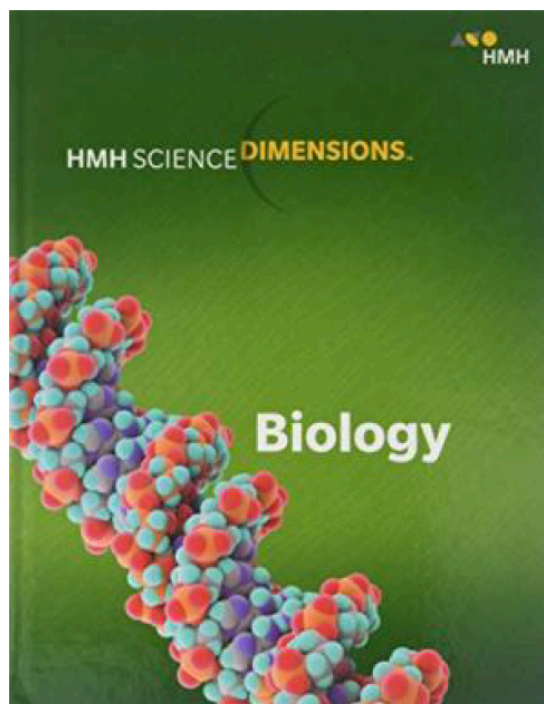
Block 2 h (textbook - medium)

I would like to ask you to imagine that you are looking to buy a Biology textbook for studying.

Assume that the average price for a Biology textbook is 50€.

Below you can see a picture of a textbook that would be suitable for your study purpose.

You may take as much time as you need to get a visual impression of this textbook.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this textbook.

Block 2 i (textbook - high)

I would like to ask you to imagine that you are looking to buy a Biology textbook for studying.

Assume that the average price for a Biology textbook is 50€.

Below you can see a picture of a textbook that would be suitable for your study purpose.

You may take as much time as you need to get a visual impression of this textbook.



Once you are ready, click the "arrow" button below to proceed to the next screen, which contains some questions about this textbook.

Block 3 (Purchase Likelihood, Overall Satisfaction, Willingness to Pay)

Remember that you want to buy a product like the one you just saw.

In this section I ask you to describe your overall feelings about the product seen before.

To what extent do you agree or disagree with the following statements?

	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree
I am willing to buy the product I saw before	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect the product to be overall satisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please mention a specific number in Euros (Not a range).

Block 4 (Design appeal and customer attitude)

How appealing did you find the design of this product?
(to select the middle value, click on the slider)

1 2 3 4 5

Not appealing at all (1) -
Very appealing (5)

In your opinion what best describes what you thought about the product you just saw?

(to select the middle value, click on the slider)

I found the product...

	1	2	3	4	5
Bad (1) - (Good (5)					
Unpleasant (1) - Pleasant (5)					
Unfavourable (1) - Favourable (5)					
Unlikeable (1) - Likeable (5)					

To what extent do you agree or disagree with the following statements?

	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree
Generally speaking, the higher the price of a product, the higher the quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The old saying you get what you pay for is generally true	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The price of a product is a good indicator of its quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You always have to pay a bit more for the best	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 5 (Hedonic/Utilitarian Scale)

Please bring to mind again the product you saw earlier.

To what extent do the following words describe this product?
(to select the middle value, click on the slider)

	1	2	3	4	5
Useless (1) - Useful (5)					
Not Functional (1) - Functional (5)					
Not Practical (1) - Practical (5)					
Not Problem Solving (1) - Problem Solving (5)					
Unhelpful (1) - Helpful (5)					
Not Delightful (1) - Delightful (5)					
Unenjoyable (1) - Enjoyable (5)					
Not Amusing (1) - Amusing (5)					
Unpleasant (1) - Pleasant (5)					
Not Cheerful (1) - Cheerful (5)					

Block 6 (Mediators)

In this final section you will see 15 statements regarding your buying behaviour.

To what extent do you agree or disagree with the following statements?

	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree
The status of a product is relevant to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Buying new products makes me feel like a person of worth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am interested in new products with status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Buying new products helps me to develop more respect for myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like it when people pay attention to what I say about my consumption activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree
Without buying new products I don't have much to be proud of	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the idea that people want to learn more about me through the products and services I use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I talk to people about my consumption activities to let them know more about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Buying new products helps me to be satisfied with myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to talk about what products and services I use so people can get to know me better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree
I would pay more for a product if it had status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the attention I get when I talk to people about the products and services I use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Without buying new products I feel like I am no good at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would buy a product because it has status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A product is more valuable to me if it has some prestige appeal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 7 (Demographics)

How old are you?

What is your gender?

- Male
- Female
- Transgender
- Other

What is your highest level of education?

- No formal education
- High School
- Bachelor's degree
- Master's degree
- PhD/Doctorate
- Other

Block 8 (Thank You!)

Before you leave, I would appreciate if you send this survey to friends and family to support my research!

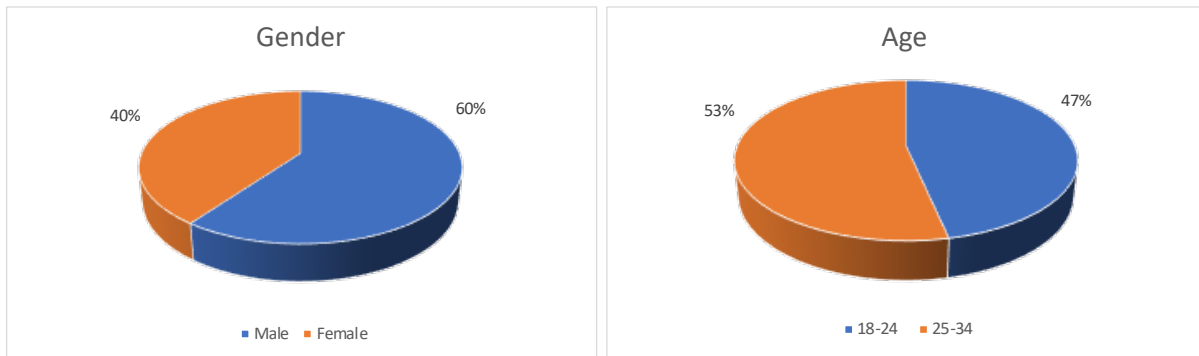
Please click on the "arrow" button below to submit your response.

Thank you very much for participating!

Have a great day,

Max

F. Sample Composition Pre-Study

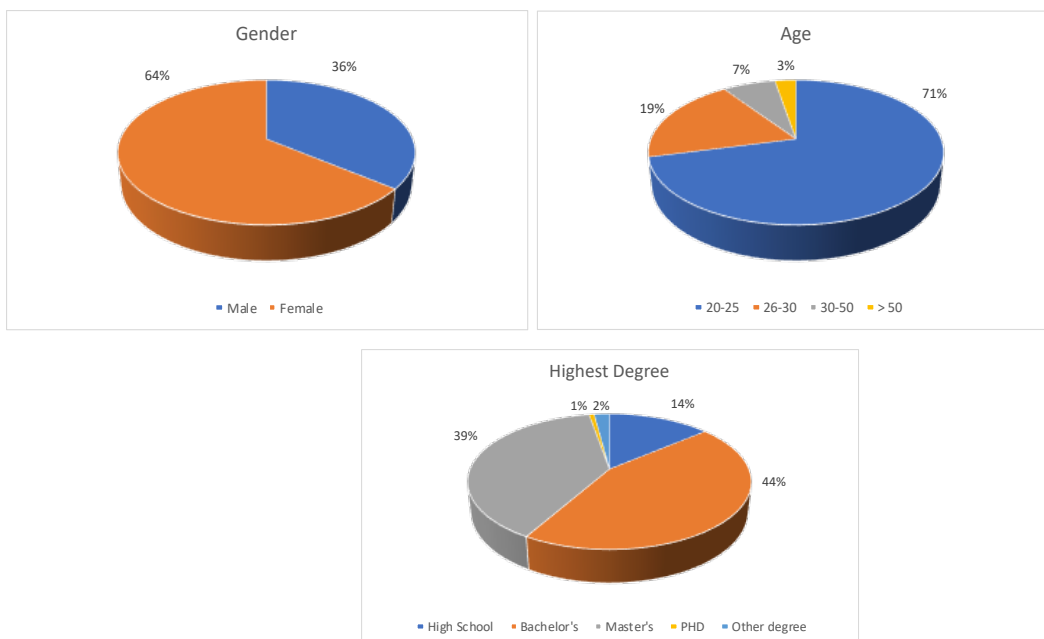


G. Assessment of utilitarian product value




	Useless - Useful	Not Functional - Functional	Not Practical - Practical
Textbook UT means	4.1	3.5	3.1
Toolset UT means	5	4.7	4.7
Printer UT means	3.6	3.7	3.3
	Not Problem Solving - Problem Solving	Unhelpful - Helpful	Overall means (UT)
Textbook UT means	3.7	4.1	2.14
Toolset UT means	4.6	4.8	2.88
Printer UT means	3.8	4	2.12




	Not Delightful - Delightful	Unenjoyable - Enjoyable	Not Amusing - Amusing
Textbook HED means	3	2.6	2.2
Toolset HED means	3	3.1	2.6
Printer HED means	2.2	2	1.9
	Unpleasant - Pleasant	Not Cheerful - Cheerful	Overall means (HED)
Textbook HED means	2.8	2.1	1.56
Toolset HED means	3.3	2.7	1.74
Printer HED means	2.1	1.9	1.22

H. Sample Composition Main Study



I. Reassessment of utilitarian product value

 Mean_Printer_OverallUTScore	 Mean_Toolset_OverallUTScore	 Mean_Textbook_OverallUTScore
3.85	4.16	3.80

 Mean_Printer_OverallHEDScore	 Mean_Toolset_OverallHEDScore	 Mean_Textbook_OverallHEDScore
2.44	2.55	2.57

J. Hayes Mediation Model 4 – Status-Seeking

***** PROCESS Procedure for SPSS Version 3.4.1 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4

Y : WTP_Perc = WTP_Percentage
X : Design_A = Design_Appeal
M : StatusSe = StatusSeeking

Covariates:

Mean_Pri = Mean_PriceSensitivity

Sample

Size: 145

OUTCOME VARIABLE:

StatusSe

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.2563	.0657	.8731	4.9924	2.0000	142.0000	.0080

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.3526	.4236	5.5535	.0000	1.5152	3.1900
Design_A	-.1225	.0776	-1.5786	.1167	-.2759	.0309
Mean_Pri	.2500	.0961	2.6006	.0103	.0600	.4400

OUTCOME VARIABLE:

WTP_Perc

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.3820	.1459	.1288	8.0292	3.0000	141.0000	.0001

Model

	coeff	se	t	p	LLCI	ULCI
constant	.2104	.1795	1.1722	.2431	-.1445	.5653
Design_A	.1345	.0301	4.4726	.0000	.0750	.1939
StatusSe	-.0353	.0322	-1.0953	.2752	-.0990	.0284
Mean_Pri	.0631	.0378	1.6695	.0972	-.0116	.1378

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

WTP_Perc

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.3723	.1386	.1290	11.4279	2.0000	142.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.1274	.1628	.7822	.4354	-.1945	.4492
Design_A	.1388	.0298	4.6535	.0000	.0798	.1977
Mean_Pri	.0543	.0369	1.4687	.1441	-.0188	.1273

```

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****
Total effect of X on Y
  Effect      se          t          p      LLCI      ULCI      c_ps      c_cs
  .1388      .0298      4.6535      .0000      .0798      .1977      .3612      .3636

Direct effect of X on Y
  Effect      se          t          p      LLCI      ULCI      c'_ps      c'_cs
  .1345      .0301      4.4726      .0000      .0750      .1939      .3499      .3523

Indirect effect(s) of X on Y:
StatusSe      Effect      BootSE      BootLLCI      BootULCI
  .0043      .0055      -.0053      .0168

Partially standardized indirect effect(s) of X on Y:
StatusSe      Effect      BootSE      BootLLCI      BootULCI
  .0113      .0139      -.0153      .0411

Completely standardized indirect effect(s) of X on Y:
StatusSe      Effect      BootSE      BootLLCI      BootULCI
  .0113      .0140      -.0151      .0415

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

----- END MATRIX -----

```

K. Hayes Mediation Model 4 – Self-Esteem Enhancement

***** PROCESS Procedure for SPSS Version 3.4.1 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4

Y : WTP_Perc = WTP_Percentage
X : Design_A = Design_Appeal
M : SelfEste = SelfEsteem

Covariates:

Mean_Pri = Mean_PriceSensitivity

Sample

Size: 145

OUTCOME VARIABLE:

SelfEste

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2008	.0403	.4932	2.9836	2.0000	142.0000	.0538

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.8530	.3184	5.8198	.0000	1.2236	2.4823
Design_A	-.1026	.0583	-1.7597	.0806	-.2179	.0127
Mean_Pri	.1117	.0723	1.5463	.1243	-.0311	.2546

OUTCOME VARIABLE:

WTP_Perc

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3941	.1553	.1274	8.6439	3.0000	141.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.2593	.1801	1.4401	.1521	-.0967	.6153
Design_A	.1315	.0300	4.3886	.0000	.0722	.1907
SelfEste	-.0712	.0426	-1.6698	.0972	-.1555	.0131
Mean_Pri	.0622	.0370	1.6805	.0951	-.0110	.1354

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

WTP_Perc

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3723	.1386	.1290	11.4279	2.0000	142.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.1274	.1628	.7822	.4354	-.1945	.4492
Design_A	.1388	.0298	4.6535	.0000	.0798	.1977
Mean_Pri	.0543	.0369	1.4687	.1441	-.0188	.1273

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_ps	c_cs
.1388	.0298	4.6535	.0000	.0798	.1977	.3612	.3636

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.1315	.0300	4.3886	.0000	.0722	.1907	.3421	.3445

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SelfEste	.0073	.0066	-.0025	.0233

Partially standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SelfEste	.0190	.0160	-.0072	.0561

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SelfEste	.0191	.0160	-.0072	.0550

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

----- END MATRIX -----

L. Hayes Mediation Model 4 – Self-Expression

***** PROCESS Procedure for SPSS Version 3.4.1 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4

Y : WTP_Perc = WTP_Percentage
X : Design_A = Design_Appeal
M : SelfExpr = SelfExpression

Covariates:

Mean_Pri = Mean_PriceSensitivity

Sample

Size: 145

OUTCOME VARIABLE:

SelfExpr

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2515	.0633	.7034	4.7950	2.0000	142.0000	.0097

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.8411	.3802	4.8421	.0000	1.0895	2.5928
Design_A	-.0327	.0696	-.4692	.6396	-.1704	.1050
Mean_Pri	.2600	.0863	3.0130	.0031	.0894	.4306

OUTCOME VARIABLE:

WTP_Perc

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3772	.1422	.1293	7.7940	3.0000	141.0000	.0001

Model

	coeff	se	t	p	LLCI	ULCI
constant	.1783	.1760	1.0133	.3127	-.1696	.5263
Design_A	.1379	.0299	4.6130	.0000	.0788	.1970
SelfExpr	-.0277	.0360	-.7694	.4429	-.0988	.0435
Mean_Pri	.0615	.0382	1.6104	.1095	-.0140	.1369

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

WTP_Perc

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3723	.1386	.1290	11.4279	2.0000	142.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.1274	.1628	.7822	.4354	-.1945	.4492
Design_A	.1388	.0298	4.6535	.0000	.0798	.1977
Mean_Pri	.0543	.0369	1.4687	.1441	-.0188	.1273

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_ps	c_cs
.1388	.0298	4.6535	.0000	.0798	.1977	.3612	.3636

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.1379	.0299	4.6130	.0000	.0788	.1970	.3588	.3613

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SelfExpr	.0009	.0042	-.0061	.0121

Partially standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SelfExpr	.0024	.0103	-.0160	.0280

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SelfExpr	.0024	.0102	-.0160	.0277

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

----- END MATRIX -----

M. Hayes Mediation Model 4 – Several Mediators

Model : 4

Y : WTP_Perc
X : Design_A
M1 : StatusSe
M2 : SelfExpr
M3 : SelfEste

Covariates:

Mean_Pri

Sample

Size: 145

OUTCOME VARIABLE:

StatusSe

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2563	.0657	.8731	4.9924	2.0000	142.0000	.0080

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.3526	.4236	5.5535	.0000	1.5152	3.1900
Design_A	-.1225	.0776	-1.5786	.1167	-.2759	.0309
Mean_Pri	.2500	.0961	2.6006	.0103	.0600	.4400

OUTCOME VARIABLE:

SelfExpr

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2515	.0633	.7034	4.7950	2.0000	142.0000	.0097

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.8411	.3802	4.8421	.0000	1.0895	2.5928
Design_A	-.0327	.0696	-.4692	.6396	-.1704	.1050
Mean_Pri	.2600	.0863	3.0130	.0031	.0894	.4306

OUTCOME VARIABLE:

SelfEste

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2008	.0403	.4932	2.9836	2.0000	142.0000	.0538

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.8530	.3184	5.8198	.0000	1.2236	2.4823
Design_A	-.1026	.0583	-1.7597	.0806	-.2179	.0127
Mean_Pri	.1117	.0723	1.5463	.1243	-.0311	.2546

OUTCOME VARIABLE:

WTP_Perc

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3948	.1559	.1291	5.1328	5.0000	139.0000	.0002

Model

	coeff	se	t	p	LLCI	ULCI
constant	.2706	.1887	1.4343	.1537	-.1024	.6437
Design_A	.1309	.0302	4.3269	.0000	.0711	.1907
StatusSe	-.0109	.0375	-.2899	.7723	-.0850	.0633
SelfExpr	.0008	.0408	.0192	.9847	-.0799	.0815
SelfEste	-.0643	.0549	-1.1705	.2438	-.1729	.0443
Mean_Pri	.0640	.0387	1.6534	.1005	-.0125	.1405

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

WTP_Perc

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3723	.1386	.1290	11.4279	2.0000	142.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.1274	.1628	.7822	.4354	-.1945	.4492
Design_A	.1388	.0298	4.6535	.0000	.0798	.1977
Mean_Pri	.0543	.0369	1.4687	.1441	-.0188	.1273

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.1388	.0298	4.6535	.0000	.0798	.1977	.3612	.3636

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.1309	.0302	4.3269	.0000	.0711	.1907	.3406	.3429

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
TOTAL	.0079	.0081	-.0063	.0258
StatusSe	.0013	.0049	-.0092	.0118
SelfExpr	.0000	.0041	-.0082	.0099
SelfEste	.0066	.0064	-.0039	.0217

Partially standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
TOTAL	.0206	.0203	-.0171	.0627
StatusSe	.0035	.0131	-.0255	.0302
SelfExpr	-.0001	.0108	-.0222	.0248
SelfEste	.0172	.0168	-.0107	.0561

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
TOTAL	.0207	.0204	-.0169	.0637
StatusSe	.0035	.0131	-.0256	.0303
SelfExpr	-.0001	.0107	-.0222	.0244
SelfEste	.0173	.0168	-.0107	.0559

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

N. Cronbach's Alpha – UT/HED Scale Reliability

Pre-Study:

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.883	5

Reliability Statistics

Cronbach's Alpha	N of Items
.749	5

Main Study:

Case Processing Summary

		N	%
Cases	Valid	145	100.0
	Excluded ^a	0	.0
	Total	145	100.0

a. Listwise deletion based on all variables in the procedure.

Case Processing Summary

		N	%
Cases	Valid	145	100.0
	Excluded ^a	0	.0
	Total	145	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.817	5

Reliability Statistics

Cronbach's Alpha	N of Items
.812	5