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The Role of Information in Consumers' Decisions: A Closer Look at Online Reviews and Product Lists

Simon Quaschning

2013

Advisors:

Prof. dr. Mario Pandelaere & Prof. dr. Iris Vermeir

Submitted at Ghent University, Faculty of Economics and Business Administration

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<div style="text-align: right">Simon Quaschning, 1 oktober 2013</div>

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SUMMARY OF DISSERTATION

I n recent years, making purchase decisions has become increasingly difficult. Especially with the emergence of the Internet and the increasing popularity of e-commerce, consumers' purchase decisions are often made in an environment with a virtually infinite number of choice options. This choice overload bears the possibility of increasing decision uncertainty. To reduce this uncertainty, consumers often seek additional product information. This doctoral dissertation investigates two particularly relevant decision aids: online reviews and multi-option multi-attribute product lists. Online reviews are product evaluations written by other consumers, based on their previous product experiences. Multi-option multi-attribute lists are product lists in which a number of choice options (multi-option) are sorted on some relevant product attributes (multi-attribute), such as price and quality. This information presentation format provides a readily accessible summary of various choice options, making it easy to compare them.

Consumers use information sources, such as online reviews and product lists, across multiple stages of the purchase decision process. They will first evaluate the helpfulness of the information, before they use the information for evaluating the available choice options. The current dissertation consists of three essays that investigate the role of online reviews and product lists in these two stages of consumers' decision process. The first two empirical essays pertain to how consumers evaluate the helpfulness of online reviews by (1) estimating the similarity of the reviewer to themselves (i.e., to which degree does a consumer identifies himself with the reviewer) and by (2) evaluating how reflective a review is of the actual product quality versus how much it is driven by the personal motivations of the reviewer (i.e., the perceived objectivity of the review). The third empirical essay examines how consumers use the

information in multi-option multi-attribute lists to evaluate choice options.

The first essay (Chapter II) investigates the influence of the perceived similarity of the reviewer with the self on the helpfulness of online reviews. Information from others is often perceived as more helpful when people believe that this information is consistent with their own preferences and expectancies. Consumers like to read reviews that talk about product aspects they themselves find important and where the reviewer expects the same from the product as they do. Consequently, a review is perceived as more helpful if readers can identify themselves with the reviewer. Previous research has already demonstrated the effect of source similarity on the likelihood of the information to be perceived as useful (Aksoy et al., 2006). Reviews, however, often don't enclose information about the personality and preferences of the reviewer. This dissertation demonstrates that when such information is missing, the type of the reviewed product may affect the perceived similarity of a reviewer. We make a distinction between hedonic goods, which are characterized by experiential enjoyment and fun, and utilitarian goods, which are consumed for functional and practical goals.

Using both experimental data and secondary data from Amazon.com, the results of this research demonstrate that online reviews for utilitarian goods are perceived as more helpful than reviews for hedonic goods. Consumers perceive the evaluation of hedonic goods as a question of personal and subjective taste, while the evaluation of utilitarian goods is seen as a matter of opinion, which depends on seemingly objective criteria. This difference affects the perceived similarity with the reviewer. If consumers are aware of the relatively more objective nature of the product (as is the case for utilitarian products), they believe that there is a higher chance that the reviewer has the same expectations about the product. In contrast, if the evaluation of the product is strongly dependent on taste (as is the case for hedonic products), the reviewer will be

perceived as less similar to the self. The perceived similarity with the reviewer is positively related to the review helpfulness.

Another important factor for the helpfulness of online reviews is the degree to which reviews are reflective of the actual product quality. The second empirical essay of this dissertation (Chapter III) investigates if the consistency of a review's valence (i.e., is the review positive or negative) with the valence of other available reviews determines the perceived review helpfulness. Previous research has suggested that review valence is particularly relevant for the helpfulness of online reviews (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang, Craciun, & Shin, 2010). This dissertation, however, demonstrates that the influence of review valence is highly dependent on its consistency with the valence of other available reviews. This valence consistency effect is driven by consumers' causal attributions. While consistent reviews are more readily attributed to the actual product quality, inconsistent reviews are more readily attributed to personal motivations of the reviewer, which are less relevant for the evaluation of the product. However, when the review is written by an expert reviewer, the valence consistency effect is attenuated. Inconsistent expert reviews will be attributed more to the actual product than regular (non-expert) inconsistent reviews, increasing their perceived helpfulness.

The last essay of this dissertation (Chapter IV) focuses on how consumers use information to evaluate choice options. More specifically, this research focuses on the role of multi-option multi-attribute lists in consumers' product evaluations. The influence of decision aids if often determined by the format in which information is presented. In product lists, the options can be sorted on multiple attributes, while they are always sorted on one attribute first. This research investigates how the choice of this primary sorting attribute influences consumers' judgments by influencing the ease by which attribute levels can be evaluated. Sorting options on

a given attribute makes evaluation of attribute levels easier. In a best-to-worst sorting for example, it is clear that the second-ranked option has the second-to-best value on the sorting attribute. The increased ease-of-evaluation of the sorting attribute, in turn, increases the role of the attribute in consumers' product evaluations. This sorting effect, however, does not apply to all attributes. Some attributes are intrinsically easier to evaluate, even when the values of this attribute are not sorted. For example, consumers find it easier to understand the monthly subscription costs of an internet subscription than the download speed of an internet subscription. When options are sorted on a hard-to-evaluate attribute, people will need less time to evaluate the values of this attribute. The time needed to evaluate attribute values, as a proxy for the ease-of-evaluation, explains the sorting effect.

 Making decisions is an important aspect of our everyday life. For many decisions, we rely on different information sources. Three empirical essays use online reviews and multi-option multi-attribute product lists to investigate how consumers evaluate the value of information and use information in their decision process. The findings of this dissertation expand our understanding of the role of information in consumers' decision process.

DUTCH SUMMARY

I n het voorbije decennium werd het nemen van beslissingen alsmaar moeilijker. Vooral door de opkomst van het internet en de toenemende populariteit van e-commerce worden beslissingen vaak genomen in de context van een bijna oneindig aantal keuzemogelijkheden. Deze keuzeovervloed zorgt voor meer onzekerheid. Om deze onzekerheid weg te werken, gaan consumenten vaak op zoek naar informatie. Dit doctoraat onderzoekt het gebruik van twee relevante bronnen van informatie: online recensies en multi-optie multi-attribuut productlijsten. Online recensies zijn productevaluaties die worden geschreven door andere klanten, gebaseerd op hun ervaringen met het product. Multi-optie, multi-attribuut lijsten zijn productlijsten waarbij een aantal keuzealternatieven (multi-optie) op enkele relevante producteigenschappen (Multi-attribuut) gesorteerd worden, zoals prijs en kwaliteit. Dit stelt de consument in staat op een gemakkelijke manier een overzicht krijgen van de eigenschappen van de beschikbare opties.

Consumenten gebruiken dergelijke informatiebronnen tijdens verschillende stappen van hun beslissingsproces. Voordat consumenten bepaalde informatie gebruiken voor de evaluatie van de verschillende mogelijke keuzeopties, wordt de informatie vaak eerst beoordeeld op zijn behulpzaamheid. Dit doctoraat omvat drie onderzoeken die dieper ingaan op de rol van de twee informatiebronnen in het beslissingsproces. De eerste twee empirische onderzoeken bekijken hoe consumenten de behulpzaamheid van online recensies beoordelen door (1) een inschatting te maken van de gelijkheid tussen de recensent en zichzelf (met andere woorden: in welke mate vereenzelvigt de consument zich met de schrijver van een recensie?) en (2) door te beoordelen in welke mate een recensie de echte kwaliteit van een product of de persoonlijke voorkeuren van

een recensent weerspiegelt (met andere woorden: de gepercipieerde objectiviteit van de recensie). Het derde empirische onderzoek bekijkt hoe consumenten de informatie in productlijsten gebruiken voor de evaluatie van keuzealternatieven.

Het eerste onderzoek (Hoofdstuk II) kijkt naar de invloed van de gepercipieerde gelijkheid van de recensent op de behulpzaamheid van deze recensie. Recensies worden over het algemeen als nuttiger of behulpzamer gezien door een consument, wanneer de gegeven informatie overeenkomt met de voorkeuren en verwachtingen van de consument. Consumenten willen recensies lezen waarin de aspecten van een product worden besproken die zijzelf belangrijk vinden en waarin de recensent hetzelfde verwacht van het product. Dat heeft als gevolg dat een recensie als behulpzamer zal worden gezien door consumenten indien deze is geschreven door een persoon met wie ze zich kunnen vereenzelvigen. Onderzoek heeft reeds aangetoond dat de gelijkenis met de bron van informatie ervoor kan zorgen dat de informatie als nuttiger wordt beoordeeld (e.g., Aksoy et al. 2006). Online recensies geven echter vaak geen informatie over de persoonlijkheid en voorkeuren van de recensent. Dit doctoraat toont aan dat wanneer deze informatie ontbreekt, het product type een invloed kan hebben op de waargenomen gelijkenis met de recensent. We maken hierbij een onderscheid tussen hedonistische goederen, waarbij mensen vooral geïnteresseerd zijn in vermaak, plezier en genot, en utilitaire goederen, die geconsumeerd worden voor een bepaalde functie of om een bepaald doel te bereiken.

De resultaten van dit hoofdstuk tonen aan dat recensies voor utilitaire goederen als behulpzamer worden gezien dan recensies voor hedonistische goederen. Mensen zien de kwaliteit van een hedonistisch goed meer als een kwestie van hun persoonlijke en subjectieve smaak. De kwaliteit van utilitaire producten wordt daarentegen als meer objectief waargenomen. Dit verschil beïnvloedt de gepercipieerde gelijkenis met de recensent. Indien een consument

bewust is van het relatief objectieve karakter van een product, zoals het geval is voor utilitaire producten, schat hij de kans hoger in dat een recensent dezelfde verwachtingen heeft. Echter, indien de tevredenheid van een product sterk afhankelijk is van iemands smaak zal men de kans kleiner inschatten dat anderen dezelfde verwachtingen delen. De hogere gepercipieerde gelijkenis met de recensent wordt tenslotte vertaald in een hogere behulpzaamheid van de recensie.

Een tweede belangrijke factor voor de behulpzaamheid van een recensie is of de recensie een afspiegeling is van de werkelijke kwaliteit van het product. Het tweede onderzoek van dit doctoraat (Hoofdstuk III) bekijkt in welke mate de consistentie van de richting van een recensie (i.e., is de recensie positief of negatief) met de richting van andere recensies een invloed heeft op de behulpzaamheid van de recensie. Voorgaand onderzoek heeft vaak gesuggereerd dat de richting van een recensie een bepalende factor is voor de behulpzaamheid van een recensie (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang, Craciun, & Shin, 2010). Het onderzoek in dit proefschrift toont echter aan dat het belangrijker is dat de recensie consistent is met andere beschikbare recensies. Dit kan verklaard worden door de veronderstellingen die consumenten maken. Consistente recensies worden sneller toegeschreven aan productrelevante oorzaken. Inconsistente recensies daarentegen, zullen sneller toegeschreven worden aan de factoren die eigen zijn aan de recensent en daardoor dus minder relevant zijn voor de beoordeling van een product. Echter, wanneer de recensie geschreven wordt door een expert, dan heeft de consistentie met andere recensies geen effect op de beoordeling ervan. Deze worden altijd in grotere mate toegeschreven aan het product zelf (en niet aan de recensent) en worden daardoor dus ook altijd als even behulpzaam gezien.

Het laatste onderzoek (Hoofdstuk IV) focust op hoe mensen uiteindelijk informatie

gebruiken om keuzeopties te evalueren. Meer bepaald wordt onderzocht hoe productlijsten de productbeoordelingen van consumenten beïnvloeden. De invloed van informatiebronnen wordt vaak bepaald door de manier waarop informatie wordt gepresenteerd. Dit geldt ook voor productlijsten. In productlijsten kunnen de verschillende opties gesorteerd worden op een bepaald attribuut. Dit hoofdstuk onderzoekt hoe de keuze van het attribuut waarop men de opties sorteert een invloed heeft op de evaluatie van de consument. Door opties op een bepaald attribuut te sorteren wordt het voor de consument gemakkelijker om de waarden van dit attribuut te evalueren. Zo weet men bijvoorbeeld dat een optie die op de tweede plaats van de ranglijst staat de tweede beste waarde heeft op het attribuut waarop de opties zijn gerangschikt. Dit sorteereffect geldt echter niet voor alle attributen. Sommige attributen zijn intrinsiek gemakkelijker te evalueren voor mensen, ook wanneer de waarden van dit attribuut niet gesorteerd zijn. Consumenten vinden het bijvoorbeeld gemakkelijker om de kosten van een internetabonnement te begrijpen dan de downloadsnelheid van de internetconnectie. Wanneer de opties gesorteerd zijn op een moeilijker te evalueren attribuut, dan zullen mensen minder lang kijken naar de waarden van dit attribuut en hebben ze dus minder tijd nodig hebben om deze waarden te evalueren. De benodigde tijd om attribuutwaarden te evalueren verklaart het sorteereffect.

Het nemen van beslissingen is een belangrijk aspect van ons dagelijks leven. Voor vele van deze beslissingen vertrouwen we op verschillende informatiebronnen. Samenvattend, bekijken drie onderzoeken aan de hand van online recensies en productlijsten hoe we informatie beoordelen en gebruiken voor de evaluatie van keuzeopties. De resultaten van dit proefschrift dragen bij tot ons begrip van de rol van informatie in het beslissingsproces van de consument.

CHAPTER I:

INTRODUCTION

CHAPTER I: INTRODUCTION

I n recent years, making purchase decisions has become increasingly difficult. When planning a purchase, consumers often face an abundance of choice options. This is especially likely to be true for online decisions. In the last decade, e-commerce has witnessed an incredible growth as consumers are increasingly making purchases online (Huang & Yang, 2008; Xiao & Benbasat, 2007). In contrast to traditional retailing, physical shelf space ceases to be a limitation (Lurie, 2004). As a consequence, consumers' purchase decisions are often made in an environment with a virtually infinite number of choice options (Häubl & Trifts, 2000). At first sight, having access to a very large number of products is highly desirable. Having many alternatives and a lot of information available may increase consumers' chance of making a better purchase decision, as the chance increases to select an option that matches a person's personal preferences (Häubl & Murray, 2003). However, due to cognitive constraints of human information processing, consumers may be unable to adequately process the large amount of available information (Häubl & Trifts, 2000; Simon, 1955). Hence, they can experience too much choice (Botti & Iyengar, 2006; Schwartz, 2004). Consequently, the availability of countless choice options bears the possibility of experiencing decreased choice confidence, leading to greater uncertainty (Anderson, 2003; Chernev, 2003).

Confronted with uncertainty, consumers often engage in uncertainty-reduction efforts (Berger & Calabrese, 1975) by seeking additional product information and by relying on decision aids (Urbany, Dickson, & Wilkie, 1989). This doctoral dissertation investigates two particularly relevant decision aids: online reviews and product lists. Before consumers use these decision aids to evaluate the available options, consumers evaluate the helpfulness of this

information. In two chapters, we examine how perceptions of similarity of the reviewer to the self (Chapter II) and inferences about the information source (i.e., attributions, Chapter III) affect judgment of review helpfulness. In a third chapter, we examine how product lists affect people's weighting of attributes during decision-making (Chapter IV).

In this first chapter of this dissertation, we briefly introduce online reviews and product lists. Furthermore, we discuss the role of the information sources in consumers' decision process and describe how the studies of this doctoral dissertation contribute to our understanding of information use.

INFORMATION AS DECISION AID

When making a decision in an increasingly demanding environment, consumers can rely on countless sources of information (Gershoff, Broniarczyk, & West, 2001). Product comparison websites, web-based discussion groups and online retailers provide consumers with easy access to product information to help consumers choose from the ever-expanding range of products and services (Lurie & Mason, 2007). In the current dissertation, we focus on two particular decision aids. For many purchase decisions, people consult *online reviews*, in which previous customers describe their consumption experience. Another effective means of assisting consumers' decision process are *product lists* (i.e., multi-option multi-attribute lists), which present alternatives sorted on one or more attributes. In the next sections we have a closer look on these two decision aids.

Word of Mouth (WOM) - product information that is communicated by consumers based on their personal experience - has long been known as an important information source for potential consumers (Ennew, Banerjee, & Li 2000; Purnawirawan, De Pelsmacker, & Dens, 2012). Previous research suggests that WOM exert a strong influence on both purchase decisions and satisfaction (Herr, Kardes, & Kim, 1991; Matos & Rossi, 2008; Sweeney, Soutar & Mazzarol, 2008).

As electronic commerce (or online shopping) increases in popularity, consumers are increasingly reliant on *online* WOM (e.g., reviews) and prefer websites with peer reviews (Decker, 2007; Freedman, 2008; Schlosser, 2011). Online reviews are product evaluations written by consumers who had previously consumed the product (Mudambi & Schuff, 2010) and they tend to be directed to multiple individuals, available for an indefinite period of time and are provided by unknown sources with unknown motives (Gruen, Osmonbekov, & Czaplenski, 2006; Hennig-Thurau et al., 2004; Steffes & Burgee, 2009; Schlosser, 2011).

Consumers often seek online reviews to reduce uncertainty (Hennig-Thurau, Walsh, & Walsh, 2003-4; Huang & Yang, 2008). Hence, they play a prominent role in both online and offline decision-making (Chevalier & Mayzlin, 2006; Hu, Liu, & Zhang, 2008; Huang & Yang, 2008; Steffes & Burgee, 2009). Previous research suggests that consumer reviews strongly influences consumers' willingness to pay for products (Ba & Pavlou, 2002; Houser & Woodes, 2006) and product sales (e.g., Chevalier & Mayzlin, 2006; Hu, Liu, & Zhang, 2008; Huang & Yang, 2008; Senecal & Nantel, 2004; Steffes & Burgee, 2009; Dellarocas, Zhang, & Awad, 2006; Zhu & Zhang, 2010).

In addition to being important for consumers, reviews also impact firms. The presence of customer reviews has the potential to improve the social presence of company website, attract customer visits, increase the time spent on the website, create a community among shoppers and, perhaps most importantly, increase the perceived usefulness of the website (Kumar & Benbasat, 2006; Mudambi & Schuff, 2010). Consequently, many major online retailers, such as Amazon.com, Barnes & Nobles, and consumer review websites, such as Yelp.com or eOpinions.com, offer consumers the opportunity to share their opinions about products.

Multi-Option Multi-Attribute Lists

Product lists are another popular decision aid for consumers (Hong, Thong, & Tam, 2004). A product list displays a number of products sequentially on a website (Cai & Xu, 2008; Diehl & Zauberman, 2005). These lists can take on different forms. While rankings, such as bestseller lists and top 10 lists, simply sort options according to a particular criterion (such as total sales), the current dissertation focuses on multi-option multi-attribute ordered sets, in which each row corresponds to a choice alternative (e.g., hotel) and each column to an attribute (e.g., the rate per night and the customer score; see Figure 1 for an example; Cai & Xu, 2008; Diehl, Kornish, & Lynch, 2003; Kleinmuntz & Schkade, 1993). This information presentation format provides a readily accessible summary of various choice alternatives, making it easy to compare these alternatives.

Figure 1: Example of a multi-option multi-attribute ordered set

1.	OOPS! HOTEL	€ 19,99	★★⯪
2.	BLUE PLANET HOTEL	€ 20,99	★⯪
3.	CENTRE KELLERMANN	€ 20,99	★★★
4.	WOODSTOCK HOTEL	€ 22,99	⯪
5.	ST. CHRISTOPHER'S PARIS	€ 23,99	⯪
6.	VINTAGE HOTEL	€ 25,99	★★
7.	LE VILLAGE HOTEL	€ 26,99	★★★★★
8.	SÉJOUR MAURICE RAVEL	€ 25,99	★★★★
9.	CALAINCOURTE SQUARE HOTEL	€ 27,99	★★★⯪
10.	LE MONTCLAIR HOTEL	€ 28,99	★

Previous research on the use of unit price information in supermarkets demonstrated that unit price information is more likely to be used in consumer's purchase decisions when it is presented in a ranked list, making the processing of information easier (Russo, 1977). Moreover, sorting options on a particular attribute was found to affect the weight of that attribute in consumers' product judgments. For example, sorting cameras by quality increases the perceived attractiveness of high-quality cameras, while sorting cameras by price leads makes cheaper options more attractive (Cai & Xu, 2008).

THE ROLE OF INFORMATION IN CONSUMERS' DECISION PROCESS

Consumers can use information sources, such as online reviews and product lists, across multiple stages of the purchase decision process (Mudambi & Schuff, 2010). As illustrated in

Figure 2, consumers' decision process consists of the stages of need recognition, information search, evaluation of alternatives, purchase decision, purchase, and post-purchase evaluation (adapted from Kotler & Keller, 2005). After a need has been recognized, consumers can rely on different decision aids for the stages of the information search and the evaluation of alternatives (Mudambi & Schuff, 2010). In the stage of information search, consumers evaluate the helpfulness of information to make a selection of which information will be used for evaluating alternatives (Cheung et al., 2009; Nabi & Hendriks, 2003). In the evaluation stage, the presented information is integrated and used to form an opinion about the individual choice options (Dhar, Nowlis, & Sherman, 2000; Slovic 1995).

Figure 2: The role of information (as indicated by the dotted line) in consumers' decision process
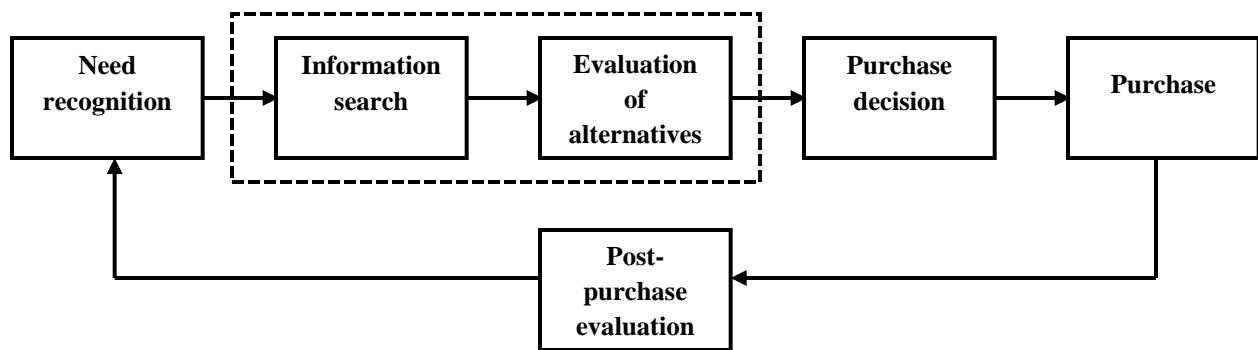
We assume that consumers use information consciously to make decisions. It has been suggested that choices might be made unconsciously (Bargh, 2002; Dijksterhuis et al., 2005; Kahneman & Frederick, 2002). This implies that information may have an influence on consumer's decisions without being evaluated as useful. Consistent with research on judgment and decision-making, however, we argue that consciously considered information plays a major

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role in consumers' decision making (Simonson, 2005). Conscious information is more likely to be salient to the customer when making a decision and is more likely to be perceived as useful to accomplish the decision goal (Feldman & Lynch, 1988). This assumption implies that information that is consciously perceived as more helpful will also have an effect on downstream variables, such as product sales (as has been illustrated by Chen, Dhanasobhon, & Smith, 2008). Moreover, this implies that consumers consciously use attribute information to evaluate different choice options (Simonson, 2005).

EVALUATION OF INFORMATION

In the information search stage, consumers search the environment for information sources related to the buying decision at hand (Bunn, 1993). Consumers often find a great deal of information from multiple sources (Wathen & Burkell, 2002). Typically, consumers will first filter the product information, retaining only the information that helps them achieve their consumption goals (Zhang, Craciun & Shin, 2010; Weiss, Lurie, & MacInnis, 2008). One essential criterion consumers use to select information for their decisions is its helpfulness.

The helpfulness of information reflects the diagnosticity of this information or the degree to which the information contains relevant product information that helps consumers in their decision-making (Jiang & Benbasat, 2004; Kempf & Smith, 1998). According to the accessibility-diagnosticity framework (Feldman & Lynch, 1988), the helpfulness of information is an important predictor of consumers' purchase decisions. Given that helpful online reviews play a greater role in determining purchase decisions (Chen et al., 2008), it is important to understand what determines the helpfulness of online reviews.

Table 1: Factors influencing information helpfulness (adapted from Wathen & Burkell, 2002)

Source	Receiver	Message	Medium	Context
- Expertise/ knowledge	- Issue relevance	- Topic/ content	- Organization	- Distraction/ "noise"
- Trustworthiness	- Motivation (i.e., need for information)	- Internal validity/ consistency	- Usability	- Time since message encountered
- Credentials	- Prior knowledge of the issue	- Plausibility of arguments	- Presentation	
- Attractiveness	- Issue involvement	- Supported by data or examples	- Vividness	
- Similarity to receiver beliefs/ context	- Values/ beliefs/ situation	- Framing (loss or gain)		
- Likeability/good will/dynamism	- Stereotypes about source or topic	- Repetition/fa miliarity		
	- "Social location"	- Ordering		

Drawing on the information processing literature, the helpfulness of information is determined by a variety of factors. As summarized in Table 1, the evaluation of (traditional) information is mostly based on factors such as the reliability of the message source, characteristics of the receiver, the quality of the message, the medium through which the information is transmitted and other contextual factors (Knapp & Daly, 2002; Wathen & Burkell, 2002). Previous research on online reviews has shown that the valence and the length of the review (Table 1, *Message*), the expertise of the consumer (*Receiver*), the presentation of information (Medium) and the expertise of the reviewer (*Source*) influence the perceived helpfulness of online information (e.g., Doh & Hwang, 2009; Mudambi & Schuff, 2010;

Purnawirawan, De Pelsmacker, & Dens, 2012; Weiss et al., 2008). The focus of this dissertation is on the source of online reviews.

The Influence of the Source

Characteristics of the information provider (i.e., the source) have been found to strongly influence the impact of information (Kelman, 1961; Chaiken 1980; Mackie, Worth, & Asuncion, 1990). For example, research on traditional (offline) information shows that consumers changed their health behavior to comply with a credible and familiar source (Campbell et al., 1999). In addition to credibility and familiarity, past resource has found that source likeability, similarity to the consumer, trustworthiness/reliability, and fit with product image affect information impact (Baker & Churchill, 1977; Chaiken & Maheswaran, 1994; Hovland & Weiss, 1951; Kang & Herr, 2000; Menon & Blount, 2003; Pornpitakpan, 2004; Slater & Rouner, 1996).

The reliability of the source also affects the helpfulness of online reviews. Previous research on online reviews has shown that including source information is positively related to the helpfulness of online reviews (Forman, Ghose, & Wiesenfeld, 2008). Moreover, several studies have argued that reviewer expertise has an effect on the helpfulness of online reviews (e.g., Cheung et al., 2009; Willemsen et al., 2011). In the current dissertation, we focus on two other important source factors: the perceived similarity of the reviewer to the self and the trustworthiness of the information source.

In contrast to traditional (offline) information sources, it is often difficult to assess the characteristics of online information sources (Cheung et al., 2009). Online reviews are typically written by total strangers in an environment devoid of social cues (Dubrovsky, Kiesler, &

Sethna, 1991; Park & Lee, 2009; Schlosser, 2011). For example, while in an offline environment

the source's attractiveness has been found to play a role (Wathen & Burkell, 2002), we often

times can't tell how attractive someone is online. One side effect of this relative anonymity is the

manipulation of online information. Firms anonymously post reviews that praise their own

products or criticize products of the competition (Harmon, 2004; Mayzlin, 2006). Similarly,

companies also offer rewards to (sometimes influential) consumers to start positive

conversations about their products (Dellarocas, 2006).

In the absence of interpersonal and message source cues, consumer can rely on other

available cues to determine a review's helpfulness. Specifically, people can rely on cues

available in the message content to make inferences about the information source.

Reviewer Similarity

One important factor that determines the helpfulness of the decision aid is whether or not

the given information reflects a consumer's preference, that is the similarity between the

preferences and product expectations of the information seeker and the information provider

(Gershoff et al., 2001; Naylor, Lamberton, & Norton, 2011; Norton, Lamberton, & Naylor

2013). The existing literature suggests that similarity plays an important role in persuasion.

Endorsers who are perceived as more similar to the self are more influential in changing attitudes

and opinions and that similarity between buyers and sellers increases the likelihood of a sale,

salesperson trust and influence on decisions (see Aksoy et al., 2006 for an overview).

However, for online reviews, often times explicit similarity information is unavailable

(i.e., online contexts often miss information about reviewers' preferences). However, people can

infer the reviewer's similarity to the self from other cues. For example, previous research found that the inclusion of geographical information increases the helpfulness of online reviews, indicating that people look for similarity cues in reviews, such as a shared hometown (Forman et al., 2008). In this dissertation, we argue that the type of product being reviewed may also be used to make similarity inferences, which in turn affects the perceived helpfulness of the review. Specifically, we propose that reviewers for utilitarian products are perceived as more similar than reviewers for hedonic products, which is caused by the relative objective (subjective) character of utilitarian (hedonic) products (Chapter II).

Reviewer Trustworthiness

Another crucial factor is the reviewer's trustworthiness. This is the degree of confidence that a source is motivated to communicate valid assertions and that the communicated information is thus reflective of the actual product quality (McCracken, 1989). The trustworthiness is determined by attributions about why product information is shared (Friestad & Wright, 1994). According to the attribution theory (e.g., Kelley, 1973), consumers will mostly attribute an online review to either the product's actual performance or to other, irrelevant factors, such as the personal motives and feelings of the reviewer (Chen & Lurie, 2013; Laczniak, DeCarlo, & Ramaswami, 2007; Sen & Lerman, 2007). When a review is attributed to non-product related causes, consumers will think that the online review is not reflective of the actual product performance, but instead, is driven by reviewer-specific factors, such as the reviewer's intent to persuade.

In the absence of source information, people can use other cues to make these

attributions. Previous research has argued that people use the product type to make these attributions (Sen & Lerman, 2007). In this dissertation, we argue that consumers can also rely on the context of the review to infer how reflective a review is of a product's quality, which in turn influences the perceived helpfulness of the review. In particular, this dissertation looks into the consistency of a review's valence with the valence of other available reviews (Chapter III).

THE USE OF INFORMATION FOR PRODUCT EVALUATION

In the stage of alternative evaluation, consumers will evaluate different alternatives on the basis of their selected information. Contrary to the classical economic view of people's utility functions, in many cases, consumers do not have existing preferences (Häubl & Murray, 2003), but instead, construct preferences according to the context (Bettman, Luce, & Payne, 1998; Slovic, 1995). One important contextual factor that influences the role of information in consumers' product evaluation stage is the manner in which information is displayed (e.g., Bettman & Kakkar, 1977; Bettman et al., 1998; Bettman, Payne & Staelin, 1986; Lurie & Mason, 2007).

This dissertation investigates how the display format of information in multi-option multi-attribute lists influences consumers' product evaluation (Chapter IV). In particular, options in these product lists are ranked on some attribute first, and in case of ties, on subsequent attributes. One question is how sorting the options on a particular attribute will affect the weight of this attribute in consumers' evaluations. For example, does sorting hotels on the customer score make this attribute more or less influential in the evaluation of the hotels? The order in which options are presented often influence the decision processes by affecting the ease with

which options can be processed and evaluated (Dhar & Simonson, 1992; Diehl & Zauberman, 2005; Hamilton, Hong, & Chernev, 2007; Häubl & Trifts, 2000; Kleinmutz & Schkade, 1993; Suk, Lee, & Lichtenstein, 2012). Hence, the choice of sorting attribute in product lists may enhance consumers' ability to compare products by attributes (Alba et al., 1997).

Previous research has argued that ease of comparison is important in consumers' product evaluation. Easy-to-compare attributes (such as prices) have a greater impact on choice than harder to compare attributes (such as brand names) and the ease of comparison also affects the selected comparisons. Hence, making information easier to compare is likely to lead to increased acquisition, weighting and processing of this information (Lynch & Ariely, 2000; Bettman & Kakkar, 1977; Hsee, 1996; Kleinmutz & Schkade, 1993; Lurie & Mason, 2007; Russo, 1977; Suk et al., 2012). For example, Häubl and Murray (2003) found that including an attribute in a product comparison matrix makes it more processable and, hence, more influential in consumers' decisions. Consequently, making consumers' evaluation easier by sorting options on a particular attribute could affect the weight of this attribute in consumers' decisions. Facilitating the interpretation of attribute levels makes the attribute more active in peoples' minds. This higher accessibility may affect the use of this attribute in consumers' decision making (e.g., Higgins, 1996). In contrast, attributes that are less evaluable might be less accessible and, in turn, not considered by consumers.

DISSERTATION OUTLINE

In recent years, consumers have been facing an abundance of available choice options, especially on the Internet (Huang & Yang, 2008; Xiao & Benbasat, 2007). Confronted with

uncertainty of choice overload, consumers often use different decision aids when making product decisions (Urbany & Wilkie, 1989). This doctoral dissertation focuses on two decision aids - online reviews and product lists - as information in consumers' decision process. The work presented in this dissertation is positioned around two important stages of information use in consumers' decision process (see Table 2). The first stage pertains to how consumers evaluate information. For this stage, the dissertation focuses on the helpfulness of online reviews (Chapter II & Chapter III). Information has to be seen as valid and relevant for the decision at hand. As such, information has to be consistent with the consumer's personal preferences and information has to be perceived as reflective for the actual product quality. The second stage entails how information is used in consumers' product evaluation (Chapter IV). This dissertation focuses on the influence of multi-option multi-attribute product lists on the evaluation of alternatives; with an emphasis on the influence of the way information is presented. This concludes into three essays, which are summarized in the remainder of this chapter. All studies of these essays are summarized in Table 3 at the end of this chapter.

Table 2: Positioning of the empirical chapters in the stages of information use in consumers' decision process

Stage in decision process	Essay
1. Evaluation of Information	Chapter II: A Question of Taste? The Difference in Perceived Helpfulness of Online Reviews for Utilitarian and Hedonic Products
	Chapter III: When Being Consistent Matters: The Effect of Valence Consistency on Review Helpfulness
2. Use of Information for Product Evaluation	Chapter IV: Easy on the Mind: How Sorting Options on Different Attributes Influences Consumer Product Evaluations

Chapter II: A Question of Taste? The Difference in Perceived Helpfulness of Online Reviews for Utilitarian versus Hedonic Products

The first essay of this dissertation focuses on the influence of perceived similarity on reviewer helpfulness. Reviews are perceived as more helpful when consumers believe that the reviews are consistent with their own preferences and when they believe that the reviewer is similar to them. This research argues that perceived similarity is influenced by the hedonic versus utilitarian dimension of the reviewed product, and that this difference in similarity explains the discrepancy in perceived helpfulness of review written about utilitarian versus hedonic products.

Using both experimental and field data, we show that reviews for utilitarian goods are perceived as more helpful than reviews for hedonic goods. Further, people view the quality of utilitarian product as reflecting a general opinion, while they view the quality of hedonic products as reflecting some personal taste. Opinions are views that can be evaluated on some level with regard to their correctness and are shared by many people; tastes are subjective personal preferences that are often exclusive to individuals. These preference inferences, in turn, affect the perceived similarity of the reviewer. If a consumer is aware of the relative common and objective nature of a product (i.e., opinion), he will perceive high similarity. In contrast, if a consumer is aware of a product's individual and subjective nature (i.e., taste), he might believe that there is a small chance that reviewers share the same preferences, which connotes dissimilarity. Finally, inferences of similarity are translated into higher helpfulness.

Chapter III: When Being Consistent Matters: The Effect of Valence Consistency on Review Helpfulness

The second essay of this dissertation focuses on the influence of perceived reviewer validity, which is the degree that the review is reflective of actual product quality. When evaluating the helpfulness of online reviews, review valence is a particularly relevant factor. While negative information is often argued to be more impactful, research on online review has often identified a positivity bias. But is this really the case? This research argues that the influence of review valence is highly dependent on its consistency with the valence of other available reviews. Hence, it suggests that the positivity bias might be especially brought about by the disproportionate number of positive reviews on websites such as Amazon.com.

Three studies – using data from Amazon.com and experiments - provide evidence for a valence consistency effect. Consistent reviews are perceived as more helpful than inconsistent reviews, independent of them being positive or negative. This valence consistency effect is driven by causal attributions. Consistent reviews are more readily attributed to product related causes, being more reflective of the actual quality. Inconsistent reviews, in contrast, are more attributed to personal factors of the reviewer. Finally, this research also shows that valence consistency has no effect on review helpfulness for reviews written by expert reviewers (i.e., expert reviews). While consistent reviews are attributed to product-related attributes, independent of the reviewer expertise, inconsistent reviews are more attributed to product factors when written by an expert reviewer, further supporting the attribution theory framework.

Chapter IV: Easy on the Mind: How Sorting Options on Different Attributes Influences

Consumer Product Evaluations

The last essay of this dissertation focuses on the role of multi-option multi-attribute ordered sets in consumers' product evaluation. The influence of decision aids is often determined by the format in which information is presented. Product list displays information in a table format, in which options can be sorted on different attributes. This research investigates how the choice of the primary sorting attribute influences consumers' judgments by influencing the ease by which attribute levels can be evaluated.

Three experiments, including an eye-tracking experiment, show that sorting options on a certain attribute increases the weight of this attribute in consumers' product evaluations and demonstrates an ease-of-evaluation explanation. Importantly, the results show the sorting effect is moderated by attribute evaluability. As such, attributes that are easy-to-understand are not affected by sorting. To provide further evidence for the ease-of-evaluation explanation, this research illustrates that making it easy to compare across attribute levels, even when the attribute is not the primary sorting attribute, attenuates the sorting effect. Finally, eye movement-data demonstrates that sorting options on the hard-to-evaluate attribute decreases the time needed to evaluate levels of a given attribute. This decrease in time needed to evaluate levels of a given attribute mediate the sorting effect.

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Table 3: Overview of the studies

Chapter/Study	Independent variables	Moderators, mediators & control variables	Dependent variables	Study remarks	Research Context (stimulus)
Chapter II					
Study 1	Hedonic vs. utilitarian product	Control variables: Review valence and perceived product attractiveness (no effect)	Perceived review helpfulness (on a 7-point scale)	Experimental data	Fiction vs. non-fiction books
Study 2	Hedonic vs. utilitarian product	Control variables: Review valence (no effect) and sales rank (moderator)	Perceived review helpfulness (percentage that found the reviewer helpful)	Amazon.com data	Fiction vs. non-fiction books
Study 3	Hedonic vs. utilitarian product	Mediators: Opinion vs. taste scale and Inclusion of the Other in the Self (IOS) scale Moderator: Induced similarity Control variables: Causal attributions and importance (no effect)	Perceived review helpfulness (on a 7-point scale	Experimental data Development of a opinion vs. self scale	Hedonic vs. utilitarian massage

Chapter III

Study 1	Review valence (5-star rating of review) Average product rating	Control variables: Review length (no effect) and sales rank (moderator)	Perceived review helpfulness (percentage that found the reviewer helpful)	Amazon.com data	Books
Study 2	Review valence Review consistency	Mediator: Causal attributions	Perceived review helpfulness (on a 7-point scale	Experimental data	Restaurant
Study 3	Review consistency	Moderator: Reviewer expertise Mediator: Causal attributions	Perceived review helpfulness (on a 7-point scale	Experimental data	Tablet PC

Chapter IV

Study 1	Attribute values (subscription cost & download speed) Choice of sorting attribute	Moderator: Attribute evaluability	Attractiveness of internet subscriptions	Experimental data	Internet subscriptions
Study 2	Attribute values (wage & commuting time) Choice of sorting attribute	Moderator: Ease of comparison and attribute evaluability	Attractiveness of job offers	Experimental data	Job offers

Study 3	Attribute values (subscription cost & download speed)	Mediator: Time per evaluation	Attractiveness of internet subscriptions	Experimental data Eye-tracking experiment	Internet subscriptions
	Choice of sorting attribute				

REFERENCES

Aksoy, L., Bloom, P. N., Lurie, N. H., & Cooil, B. (2006). Should recommendation agents think like people?. *Journal of Service Research, 8(4),* 297-315.

Alba, J., Lynch, J., Weitz, B., Janiszewski, C., Lutz, R., Sawyer, A., & Wood, S. (1997). Interactive home shopping: consumer, retailer, and manufacturer incentives to participate in electronic marketplaces. *The Journal of Marketing*, *36(3),* 38-53.

Anderson, C. (2003). The psychology of doing nothing: Forms of decision avoidance result from reason and emotion. *Psychological Bulletin*, *129(1)*, 139-167.

Ba, S., & Pavlou, P. A. (2002). Evidence of the effect of trust building technology in electronic markets: Price premiums and buyer behavior. *MIS Quarterly, 26(3)*, 243-243.

Baker, M. J., & Churchill Jr, G. A. (1977). The impact of physically attractive models on advertising evaluations. *Journal of Marketing Research*, *14(4)*, 538-555.

Bargh, J. A. (2002). Losing consciousness: Automatic influences on consumer judgment, behavior, and motivation. *Journal of Consumer Research*, *29(2)*, 280-285.

Berger, C. R., & Calabrese, R. J. (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human communication research, 1(2),* 99-112.

Bettman, J. R., & Kakkar, P. (1977). Effects of information presentation format on consumer information acquisition strategies. *Journal of Consumer Research, 3(4)*, 233-240.

Bettman, J. R., Luce, M. F., & Payne, J. W. (1998). Constructive consumer choice processes. *Journal of Consumer Research, 25(3),* 187-217.

Bettman, J. R., Payne, J. W., & Staelin, R. (1986). Cognitive considerations in designing effective labels for presenting risk information. *Journal of Public Policy & Marketing*, *5,* 1-

28.

Botti, S., & Iyengar, S. S. (2006). The dark side of choice: When choice impairs social welfare. *Journal of Public Policy & Marketing, 25(1)*, 24-38.

Bunn, M. D. (1993). Taxonomy of buying decision approaches. *The Journal of Marketing, 57(1)*, 38-56.

Cai, S., & Xu, Y. (2008). Designing product lists for e-commerce: The effects of sorting on consumer decision making. *International. Journal of Human–Computer Interaction*, *24*(7), 700-721.

Campbell, M. K., Bernhardt, J. M., Waldmiller, M., Jackson, B., Potenziani, D., Weathers, B., & Demissie, S. (1999). Varying the message source in computer-tailored nutrition education. *Patient Education and Counseling, 36(2),* 157-169.

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology, 39(5),* 752-766.

Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, *66(3),* 460-473.

Chen, P., Dhanasobhon, S., & Smith, M. (2008). All reviews are not created equal: The disaggregate impact of reviews on sales on Amazon.com," working paper, Carnegie Mellon University (available at SSRN: http://ssrn.com/abstract=918083).

Chen, Z., & Lurie, N. H. (2013). Temporal contiguity and negativity bias in the impact of online word-of-mouth. *Journal of Marketing Research*, *50(4)*, 463-476.

Chernev, A. (2003). When more is less and less is more: The role of ideal point availability and

assortment in consumer choice. *Journal of Consumer Research, 30(2),* 170-183.

Cheung, M. Y., Luo, C., Sia, C. L., & Chen, H. (2009). Credibility of electronic word-of-mouth: Informational and normative determinants of on-line consumer recommendations. *International Journal of Electronic Commerce, 13(4),* 9-38.

Chevalier, J. A. and Mayzlin, D. (2006). The Effect of Word of Mouth on Sales: Online Book Reviews. *Journal of Marketing Research, 43(3*), 345-354.

Decker, S. (2007). 84% Trust user reviews over a critic. Online at. http: //www.bazaarblog.com /2007/07/03/84-trust-user-reviews-over-a-critic- marketingsherpa/

Dellarocas, C. (2006). Strategic manipulation of internet opinion forums: Implications for consumers and firms. *Management Science, 52(10)*, 1577-1593.

Dellarocas, C., Zhang, X. M., & Awad, N. F. (2007). Exploring the value of online product reviews in forecasting sales: The case of motion pictures. *Journal of Interactive marketing*, *21(4),* 23-45.

Dhar, R., & Simonson, I. (1992). The effect of the focus of comparison on consumer preferences. *Journal of Marketing Research, 29(4)*, 430-440.

Dhar, R., Nowlis, S. M., & Sherman, S. J. (2000). Trying hard or hardly trying: An analysis of context effects in choice. *Journal of Consumer Psychology*, *9(4),* 189-200.

Diehl, K., Kornish, L. J., & Lynch Jr, J. G. (2003). Smart agents: When lower search costs for quality information increase price sensitivity. *Journal of Consumer Research*, *30(1),* 56-71.

Diehl, K., & Zauberman, G. (2005). Searching ordered sets: evaluations from sequences under search. *Journal of Consumer Research, 31(4),* 824-832.

Dijksterhuis, A., Smith, P. K., Van Baaren, R. B., & Wigboldus, D. H. (2005). The unconscious consumer: Effects of environment on consumer behavior. *Journal of Consumer Psychology*,

15(3), 193-202.

Doh, S. J., & Hwang, J. S. (2009). How consumers evaluate eWOM (electronic word-of-mouth) messages. *CyberPsychology & Behavior, 12(2),* 193-197.

Dubrovsky, V. J., Kiesler, S., & Sethna, B. N. (1991). The equalization phenomenon: Status effects in computer-mediated and face-to-face decision-making groups. *Human-Computer Interaction*, *6(2),* 119-146.

Ennew, C. T., Banerjee, A. K., & Li, D. (2000). Managing word of mouth communication: empirical evidence from India. *International Journal of Bank Marketing*, *18(2),* 75-83.

Feldman, J., & Lynch, J. (1988). Self-generated validity and other effects of measurement on belief, attitude, intention, and behavior. *Journal of Applied Psychology*, *73*, 421–435.

Forman, C., Ghose, A., & Wiesenfeld, B. (2008). Examining the relationship between reviews and sales: The role of reviewer identity disclosure in electronic markets. *Information Systems Research, 19(3),* 291-313.

Freedman, L. (2008). Merchant and customer perspectives on customer reviews and user-generated content. Online at. www.powerreviews.com/social-shopping/solutions /whitepaper /2008_WhitePaper_0204_4.pdf

Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *Journal of Consumer Research*, *21(1),* 1-31.

Gershoff, A. D., Broniarczyk, S. M., & West, P. M. (2001). Recommendation or evaluation? Task sensitivity in information source selection. *Journal of Consumer Research, 28(3),* 418-438.

Gregan-Paxton, J., & Roedder John, D. (1997). The emergence of adaptive decision making in children. *Journal of Consumer Research*, *24(1)*, 43–56.

28

Gruen, T. W., Osmonbekov, T., & Czaplewski, A. J. (2006). eWOM: The impact of customer-to-customer online know-how exchange on customer value and loyalty. *Journal of Business Research*, *59(4),* 449-456.

Hamilton, R., Hong, J., & Chernev, A. (2007). Perceptual focus effects in choice. *Journal of Consumer Research*, *34(2),* 187-199.

Harmon, A. (2004). Amazon glitch unmasks war of reviewers. *New York Times* (February 14).

Häubl, G., & Murray, K. (2003). Preference constructions and persistence in digital marketplaces: The role of electronic recommendation agents. *Journal of Consumer Psychology*, *13(1)*, 75-91.

Häubl, G., & Trifts, V. (2000). Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing Science, 19(1),* 4-21.

Hennig-Thurau, T., Gwinner, K. P., Walsh, G., & Gremler, D. D. (2004). Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the internet?. *Journal of Interactive Marketing*, *18(1),* 38-52.

Hennig-Thurau, T., Walsh, G., & Walsh, G. (2003). Electronic word-of-mouth: motives for and consequences of reading customer articulations on the internet. *International Journal of Electronic Commerce, 8(2),* 51-74.

Herr, P. M., Kardes, F. R., & Kim, J. (1991). Effects of word-of-mouth and product-attribute information on persuasion: An accessibility-diagnosticity perspective. *Journal of Consumer Research, 17(4)*, 454-462.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford Press.

Hsee, C. K. (1996). The evaluability hypothesis: An explanation for preference reversals between joint and separate evaluations of alternatives. *Organizational Behavior and Human Decision Processes*, *67(3),* 247-257.

Hong, W., Thong, J. Y., & Tam, K. Y. (2004). Does animation attract online users' attention? The effects of flash on information search performance and perceptions. *Information Systems Research, 15(1),* 60-86.

Houser, D., & Wooders, J. (2006). Reputation in auctions: Theory, and evidence from ebay. *Journal of Economics & Management Strategy, 15(2)*, 353-369.

Hovland, C. I., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly, 15(4)*, 635-650.

Hu, N., Liu, L., & Zhang, J. J. (2008). Do online reviews affect product sales? The role of reviewer characteristics and temporal effects. *Information Technology and Management, 9(3),* 201-214.

Huang, Y. K., & Yang, W. I. (2008). Motives for and consequences of reading internet book reviews. *The Electronic Library, 26(1),* 97-110.

Jiang, Z., & Benbasat, I. (2004). Virtual product experience: Effects of visual and functional control of products on perceived diagnosticity and flow in electronic shopping. *Journal of Management Information Systems*, *21(3)*, 111-147.

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and Biases* (pp. 49–81). New York: Cambridge University Press.

Kang, Y. S., & Herr, P. M. (2006). Beauty and the beholder: Toward an integrative model of communication source effects. *Journal of Consumer Research*, *33(1)*, 123-130.

30

Kelley, H. H. (1973). The Processes of Causal Attributions. *American Psychologist, 28(2),* 107-128.

Kelman, H. C. (1961). Processes of opinion change. *Public Opinion Quarterly, 25(1)*, 57-78.

Kempf, D. S., & Smith, R. E. (1998). Consumer processing of product trial and the influence of prior advertising: A structural modeling approach. *Journal of Marketing Researc*h, *35(3)*, 325-338.

Kleinmuntz, D. N., & Schkade, D. A. (1993). Information displays and decision processes. *Psychological Science*, *4(4),* 221-227.

Knapp, M. L., & Daly, J. A. (2002). *Handbook of interpersonal communication*. SAGE Publications, Incorporated.

Kotler, P., & Keller, K. (2005). Marketing management: International edition.

Kumar, N., & Benbasat, I. (2006). Research note: The influence of recommendations and consumer reviews on evaluations of websites. *Information Systems Research*, *17(4)*, 425-439.

Laczniak, R. N., DeCarlo, T. E., & Ramaswami, S. N. (2001). Consumers' responses to negative word-of-mouth communication: An attribution theory perspective. *Journal of Consumer Psychology, 11(1),* 57-73.

Lurie, N. H. (2004). Decision Making in information-rich environments: the role of information structure. *Journal of Consumer Research*, *30(4),* 473-486.

Lurie, N. H., & Mason, C. H. (2007). Visual representation: Implications for decision making. *Journal of Marketing, 71(1)*, 160-177.

Lynch, J. G., & Ariely, D. (2000). Wine online: Search costs affect competition on price, quality, and distribution. *Marketing Science*, *19(1),* 83-103.

Mackie, D. M., Worth, L. T., & Asuncion, A. G. (1990). Processing of persuasive in- group messages. *Journal of Personality and Social Psychology*, *58(5)*, 812–822.

Matos, C. A., & Rossi, C. A. V. (2008). Word-of-mouth communications in marketing: a meta-analytic review of the antecedents and moderators. *Journal of the Academy of Marketing Science*, *36(4),* 578-596.

Mayzlin, D. (2006). Promotional chat on the internet. *Marketing Science*, *25(2)*, 157-165.

McCracken, G. (1989). Who is the celebrity endorser? Cultural foundations of the endorsement process. *Journal of Consumer Research*, *16(3)*, 310-321.

Menon, T., & Blount, S. (2003). The messenger bias: A relational model of knowledge valuation. *Research in Organizational Behavior*, *25*, 137-186.

Mudambi, S. M., & Schuff, D. (2010). What makes a helpful online review? A study of customer reviews on Amazon. com. *MIS Quarterly*, *34(1),* 185-200.

Nabi, R. L., & Hendriks, A. (2003). The persuasive effect of host and audience reaction shots in television talk shows. *Journal of Communication*, *53(3),* 527-543.

Naylor, R., Lamberton, C., & West, P. M. (2012). Beyond the "like" button: The impact of mere virtual presence on brand evaluations and purchase intentions in social media settings. *Journal of Marketing, 76(6),* 105-120.

Norton, D., Lamberton, C., & Naylor, R. (2013). The devil you (don't) know: Interpersonal ambiguity and inference making in competitive contexts. *Journal of Consumer Research*, *40*(4), in press.

Park, C., & Lee, T. M. (2009). Information direction, website reputation and eWOM effect: A moderating role of product type. *Journal of Business Research, 62(1),* 61-67.

Pornpitakpan, C. (2004). The persuasiveness of source credibility: A critical review of five

decades' evidence. *Journal of Applied Social Psychology*, *34(2),* 243-281.

Purnawirawan, N., De Pelsmacker, P., & Dens, N. (2012). Balance and sequence in online
reviews: How perceived usefulness affects attitudes and intentions. *Journal of Interactive
Marketing*, 26(4), 244-255.

Russo, J. E. (1977). The value of unit price information. *Journal of Marketing Research*, *14(2),*
193-201.

Schlosser, A. E. (2011). Can including pros and cons increase the helpfulness and persuasiveness
of online reviews? The interactive effects of ratings and arguments. *Journal of Consumer
Psychology*, *21(3),* 226-239.

Schwartz, B. (2004). The tyranny of choice. *Scientific American Mind*.

Sen, S., & Lerman, D. (2007). Why are you telling me this? An examination into negative
consumer reviews on the web. *Journal of Interactive Marketing*, *21(4),* 76-94.

Senecal, S., & Nantel, J. (2004). The influence of online product recommendations on
consumers' online choices. *Journal of Retailing, 80(2),* 159-169.

Simon, H. A. (1955). A behavioral model of rational choice. *The quarterly journal of economics*,
69(1), 99-118.

Simonson, I. (2005). In defense of consciousness: The role of conscious and unconscious inputs
in consumer choice. *Journal of Consumer Psychology*, *15(3)*, 211-217.

Slater, M. D., & Rouner, D. (2002). Entertainment-education and elaboration likelihood:
Understanding the processing of narrative persuasion. *Communication Theory*, *12(2)*, 173-
191.

Slovic, P. (1995). The construction of preference. *American Psychologist, 50(5),* 364.

Steffes, E. M., & Burgee, L. E. (2009). Social ties and online word of mouth. *Internet Research*,

19(1), 42-59.

Suk, K., Lee, J., & Lichtenstein, D. R. (2012). The influence of price presentation order on

consumer choice. *Journal of Marketing Research, 49(5),* 708-717.

Sweeney, J. C., Soutar, G. N., & Mazzarol, T. (2008). Factors influencing word of mouth

effectiveness: receiver perspectives. *European Journal of Marketing*, *42(3/4),* 344-364.

Urbany, J. E., Dickson, P. R., & Wilkie, W. L. (1989). Buyer uncertainty and information search.

Journal of Consumer Research, *16(2),* 208-215.

Wathen, C. N., & Burkell, J. (2002). Believe it or not: Factors influencing credibility on the

Web. *Journal of the American society for Information Science and Technology*, *53(2),* 134-

144.

Weiss, A. M., Lurie, N. H., & MacInnis, D. J. (2008). Listening to strangers: whose responses

are valuable, how valuable are they, and why?. *Journal of Marketing Research*, *45(4),* 425-

436.

Willemsen, L. M., Neijens, P. C., Bronner, F., & de Ridder, J. A. (2011). "Highly

recommended!" The content characteristics and perceived usefulness of online consumer

reviews. *Journal of Computer‐ Mediated Communication*, *17(1)*, 19-38.

Wilson, T. D., & Schooler, J. W. (1991). Thinking too much: Introspection can reduce the

quality of preferences and decisions. *Journal of Personality and Social Psychology*, *60(2)*,

181-192.

Xiao, B., & Benbasat, I. (2007). E-commerce product recommendation agents: use,

characteristics, and impact. *MIS Quarterly*, *31(1),* 137-209.

Zhang, J. Q., Craciun, G., & Shin, D. (2010). When does electronic word-of-mouth matter? A

study of consumer product reviews. *Journal of Business Research*, *63(12),* 1336-1341.

Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role

    of product and consumer characteristics. *Journal of Marketing, 74(2),* 133-148.

CHAPTER II:

A QUESTION OF TASTE?

THE DIFFERENCE IN PERCEIVED HELPFULNESS OF ONLINE REVIEWS FOR UTILITARIAN AND HEDONIC PRODUCTS

While online reviews have become an indispensable marketing tool, they are not always equally helpful. This article investigates how review helpfulness is influenced by the hedonic versus utilitarian character of the reviewed product. Both experimental and real life data demonstrate that reviews are perceived as more helpful for utilitarian products than for hedonic products. People view the quality judgment of utilitarian products as reflecting a general opinion, while they view the quality judgment of hedonic products as reflecting some personal taste. In turn, people perceive reviewers for utilitarian products as more similar to themselves than reviewers for hedonic products, which causes the difference in review helpfulness.

CHAPTER II: A QUESTION OF TASTE? THE DIFFERENCE IN PERCEIVED HELPFULNESS OF ONLINE REVIEWS FOR UTILITARIAN AND HEDONIC PRODUCTS

W ord of Mouth communications have long been acknowledged as a powerful force in the consumer marketplace (Ennew, Banerjee, & Li, 2000; Katz & Lazarsfeld, 1955). More recently, with the development of new media, the impact of others' opinions has even increased. Due to the Internet being ubiquitous, electronic Word of Mouth has become an ever more important source of information and plays a prominent role in the decision making of customers when buying both offline and online (Chevalier & Mayzlin, 2006; Hu, Liu, & Zhang, 2008; Huang & Yang, 2008; Steffes & Burgee, 2009). One particular form of electronic Word of Mouth, that has become indispensable for consumers' online purchase decisions, is online reviews (Chevalier & Mayzlin, 2006). Hence, many online businesses use them in their marketing strategies. However, to affect consumers' decisions and to have an impact on purchases, a review presumably needs to be viewed as helpful first; otherwise its role in the customers' decision process might be limited (Huang & Yang, 2008).

Information from other individuals is perceived as more helpful when people believe that it is consistent with their own preferences and expectancies (Racherla, Mandviwalla, & Connolly, 2012). Hence, to determine the helpfulness of online reviews, consumers often make inferences about how similar writers of online reviews are to themselves (Gershoff, Broniarczyk, & West, 2001; Naylor, Lamberton, & Norton, 2011; Norton, Lamberton, & Naylor, 2013). Reviews, however, often don't enclose information about the personality of the reviewer. In the present research, we argue that when such information is missing, the type of product being reviewed may affect the perceived similarity of a reviewer. Specifically, this research

hypothesizes that a reviewer is perceived as more similar to the self when he or she reviewed a utilitarian product than when he or she reviewed a hedonic product.

This prediction is based on the existing literature on preference dimensions. We distinguish between two kinds of preferences, namely opinion- versus taste-based preferences, which are specified on a continuum that runs from objectively to subjectively valid (Spears, Ellemers, & Doosje, 2009). Concretely, opinions can be related to a "correct position" and can be objectively evaluated. Taste, in contrast, is based on personal preferences and is highly subjective. We expect that due to their affect-rich nature, hedonic products are perceived to be a matter of personal taste. In contrast, for utilitarian products consumers are primarily concerned about functionality, which is objectively evaluable and, hence, a matter of opinion. Since tastes are so subjective, consumers might differ greatly in their expectations towards the product, which connotes dissimilarity. Consequently, reviewers for hedonic products are perceived as less similar than reviewers for utilitarian products. Finally, due to differences in perceived similarity, reviews for hedonic products are deemed less helpful than reviews for utilitarian products. See Figure 1 for an overview of our conceptual model.

Figure 1: Conceptual model: The relationship between hedonic vs. utilitarian goods and review helpfulness through taste – opinion inferences and perceived similarity

| Hedonic versus utilitarian product | → | Taste-opinion inferences | → | Perceived similarity with reviewer | → | Review helpfulness |
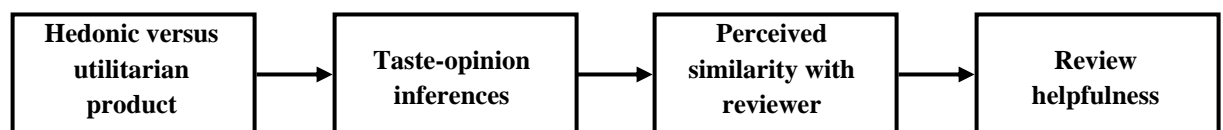
The current article contributes to the existing literature in several ways. First, we demonstrate that the product type (utilitarian vs. hedonic) affects the perceived similarity of the

providers of associated information, with providers of information for utilitarian goods being

perceived as more similar than evaluators of hedonic goods. Second, we show that the

evaluation of the quality of utilitarian goods is considered to be a matter of opinion, while the

judgment of quality of hedonic goods is seen as a question of taste. These taste-opinion

inferences explain the effect of type of product on perceived similarity of a reviewer. Third, we

show that people find other people's opinions more helpful for their own decisions than other

people's tastes; this results in higher perceived helpfulness ratings for reviews of utilitarian

products compared to reviews for hedonic products. These contributions are not only

theoretically relevant but are also interesting from a managerial perspective.

THE HELPFULNESS OF ONLINE REVIEWS

When consumers make decisions, they often look for other people's opinions or

recommendations. One of the most important sources of Word of Mouth (WOM) is product

reviews on websites (Dellarocas, 2003). Retailers such as Amazon.com, Barnes & Nobles, and

eBay, offer their customers the opportunity to share their opinions about the products they offer.

Reviews may help consumers to cope with the increased uncertainty caused by the availability of

a virtually infinite number of choice alternatives and the impossibility to physically evaluate the

product (Eggert, 2006; Häubl & Trifts, 2000). However, when using online reviews in order to

reduce uncertainty, a new problem arises: not all reviews are equally useful and some might even

hinder optimal decision-making (Huang & Yang, 2008). The question then arises: What makes a

customer review valuable to other consumers?

Prior research has found that a myriad of factors can affect consumers' perceptions of

review helpfulness (Doh & Hwang, 2009; Hu et al., 2008; Mudambi & Schuff, 2010; Zhu & Zhang, 2010). One important determinant of the perceived usefulness of information is the perceived similarity of the reviewer with the self (Gershoff et al., 2001). The more others are inferred to be similar to the self, the more their opinions are perceived as helpful, while the information provided by dissimilar others is often discounted (Brock, 1965; Brown & Reingen, 1987; Simons, Berkowitz, & Moyer, 1970). However, in an online context, consumers often face information by people they have not met before and have no prior relationship with (Zhu & Zhang, 2010). Despite the information that may be given about the reviewer, such as the user name, there is often little information about how similar the reviewer's preferences and expectancies are to a consumer's preferences.

Past research has suggested that when others' identities are unknown, consumers automatically assume that they are similar to the self (Naylor et al., 2011). In contrast, we propose that consumers use readily available cues to infer the reviewer similarity. As such, the type of product, and more particularly the hedonic versus utilitarian dimension, might be used as a cue to make inferences about the similarity with the reviewer.

ONLINE REVIEWS FOR UTILITARIAN VERSUS HEDONIC PRODUCTS

Hedonic and utilitarian alternatives are both goods, in the sense that both are expected to offer benefits to the consumer (Okada, 2005). However, while hedonic goods deliver benefits primarily in the form of experiential enjoyment, the benefit of utilitarian goods is primarily of a practical or functional nature (Batra & Ahtola, 1991; Hirschman & Holbrook, 1982; Mano & Oliver, 1993). Therefore, we can define hedonic goods as goods whose consumption is primarily

characterized by an affective and sensory experience of aesthetic or sensual pleasure, fantasy and fun. The consumption of utilitarian goods on the other hand is more cognitively driven, instrumental and goal-oriented and accomplishes a functional or practical task (Dhar & Wertenbroch, 2000; Hirschman & Holbrook, 1982). Of course, the distinction between both types of products is not always so clear. The consumption of most goods can involve both hedonic and utilitarian dimensions, whose importance depends on the usage context. For example, visiting a restaurant for a quick lunch is probably very functional, while a celebratory dinner at the same restaurant offers a more hedonic experience. The current studies focus on products and experiences that are largely hedonic or utilitarian to test the impact of product type on review helpfulness (Batra & Ahtola, 1991, Scarpi, 2012).

Online information on hedonic and utilitarian products (1) differentially influences reviewers' overall product evaluations, (2) are differentially used by consumers in their decision making process and (3) are differentially evaluated on helpfulness by consumers. Recent research has found that reviewers who are explaining and sharing positive and negative hedonic experiences in their reviews have their emotions dampened, while writing reviews for utilitarian experiences polarizes reviewers' overall evaluations (Moore, 2012). Review information on hedonic and utilitarian products is also differentially used in the consumers' decision process. The relative importance of online sources in consumers' decision making is higher for utilitarian than for hedonic products (Cheema & Papatla, 2010). Also, past research in advertising suggests that the effectiveness of an endorser is likely to be contingent on whether the product is viewed as a utilitarian or hedonic purchase (Feick & Higie, 1992; Stafford, Stafford, & Day, 2002). Moreover, the perceived helpfulness of reviews on hedonic and utilitarian products also differs. A study by Sen and Lerman (2007) demonstrated that negative product reviews for utilitarian

products were perceived as more helpful than negative reviews for their hedonic counterparts. The current article argues that both positive and negative reviews for utilitarian products are perceived as more helpful than reviews for hedonic products.

To explain the difference in helpfulness between hedonic and utilitarian goods, previous research has looked at consumers' attributions regarding the reviewers' motivation (Sen & Lerman, 2007). Specifically, it showed that people attribute the opinions expressed in negative reviews for hedonic products to reviewer-related reasons (and not to the actual product experience), but attribute negative opinions to product-related motivations in the case of reviews for utilitarian products. In the current research, we propose an alternative explanation. We propose that the type of product has an effect on consumers' perceived similarity of the reviewer. In particular, we argue that writers of reviews for utilitarian products are perceived as more similar to the self than are writers of reviews for hedonic products.

PRODUCT TYPE AND PERCEIVED SIMILARITY

The perceived similarity of the source of a message is an important predictor of influence, which aids persuasion and impedes counter persuasion (Gopinath & Nyer, 2009; Price, Feight, & Higie, 1989). Recent work has shown that perceived similarity is a factor that drives trust in eWOM (Racherla et al., 2012). However, reviews are almost always written by strangers and often lack information about the reviewer. Past research argued that the more relevant consumers perceive missing information, the more likely they are to make inferences about this information (Dick, Chakravarti, & Biehal, 1990; Naylor et al., 2011). Given the importance of reviewer similarity for the helpfulness of a review (Gershoff et al., 2001),

consumers are very likely to make inferences based on various accessible cues. As such, we argue that the product type may have an effect on consumers' perceived similarity of the reviewer. In particular, we hypothesize that writers of reviews for utilitarian products are perceived as more similar than are writers of reviews for hedonic products.

Our theory, that predicts a relationship between product type and perceived similarity, is based on the assumption that sometimes, people (the consumers) assume that other people (the reviewers) tend to agree with them and tend to have similar preferences. For example, it has been shown that people, who believe they have something in common on a few, often accidental, characteristics, tend to generalize this perceived similarity to other characteristics (e.g., Burger, Messian, Patel, del Prado, & Anderson, 2004; Jiang, Hoegg, Dahl, & Chattopadhyay, 2010). This tendency to overestimate the extent to which one's own attitudes and opinions are shared by the population at large is called the false consensus effect (Hoch, 1988; Marks & Miller, 1987; Ross, Greene, & House, 1977). Also, similarity can be derived from the content of a review.

Drawing on the inference-making literature, we argue that the effect on perceived similarity is not only caused by reviewer information and review content, but can also be inferred by the product type. Past research has shown that consumers often make inferences that go beyond the available information (Kardes, Posavac, & Cronley, 2004; Lynch & Srull, 1982). As such, we expect that the difference between utilitarian and hedonic products can cue people to feel respectively more or less similar to the reviewer of the product. A possible explanation for this effect can be found in the inferences people make about the nature of the product evaluation. Given the emotional versus cognitive bases of the hedonic and utilitarian goods, reviews may be perceived as reflecting general opinions or taste.

Opinions constitute views that can at least in principle be evaluated at some level with

regard to their correctness and therefore stand to benefit from the power and prestige of validating social support. In contrast, tastes are essentially arbitrary preferences that therefore have no intrinsic power or prestige associated with them (see Spears et al., 2009 for a review). The distinction between opinions and taste is rooted in the past literature on the distinction between beliefs and values (e.g., Goethals & Nelson, 1973), facts and values (e.g., Stasser & Stewart, 1992; Vinokur & Burnstein, 1978) and beliefs and preferences (Suls, Martin, & Wheeler, 2000). Essentially, both terms can be situated on a continuum, with opinions being objective and taste subjective. We propose that the distinction between opinion and taste largely coincides with the distinction between utilitarian and hedonic goods. As such, we propose that the evaluation of utilitarian goods is a matter of opinion, while the evaluation of hedonic goods is a question of taste. For utilitarian products, consumers are primarily concerned with the maximization of utility in terms of practicality and functionality. Consumers' judgment with respect to these products tends to be cognitively driven, instrumental and goal oriented (Strahilevitz & Myers, 1998). These quality judgments can be measured using seemingly objective criteria that are shared among many other people ("a correct position"). For hedonic products, in contrast, consumers are concerned with the achievement of certain values, such as happiness and excitement (Mort & Rose, 2004). Because of the affect-rich nature of hedonic outcomes, a product's quality lies in the eye of the beholder and should be measured in internal, subjective and discretionary terms (Botti & McGill, 2011).

The taste versus opinion framework is different from an attribution theory framework. Both in the case when a product's evaluation is a matter of taste or opinion, the reader of a review might believe that the review is caused by product-related reasons. When the product is a matter of taste, however, the reader might still discount the information, because he believes that

other people expect something else from the product. For example, a positive movie review might be perceived as being reflective of the movie's quality. Because of the subjective nature of the product, however, the discussed qualities of the movie might not be the one the reader is looking for in the product. A review that is attributed to the reviewer, in contrast, will be less helpful in both cases.

The preference inferences in terms of tastes versus opinions, in turn, affect the perceived similarity of the reviewer. Associations with either opinions or taste spill over and affect the perceived similarity of the reviewer. If consumers are aware of the relatively common and objective character of a product (i.e., opinion), they might think that the reviewer has expected the same from the product, which conveys a notion of similarity. In contrast, if a person believes a product's quality is highly dependent on one's individual preferences (i.e., taste), they might believe that there is a low chance that the reviewer shares the same taste, which connotes dissimilarity towards the reviewer. Taken together, we expect that the concept of opinion versus taste causes inferences of a higher versus a lower perceived similarity of the reviewer, which is translated into higher review helpfulness. Taken together, this discussion suggests the following hypotheses:

H1: The type of product affects review helpfulness. Reviews for utilitarian products are perceived as more helpful than reviews for positive products.

H2: The effect of product type on review helpfulness is driven by the consecutive processes of preference inferences and similarity inferences. Quality assessments of utilitarian (vs. hedonic) goods are inferred to be a matter of opinion (vs. taste) that lead to inferences of higher (vs. lower) similarity, which in turn increases perceived review helpfulness.

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OVERVIEW OF STUDIES

Four studies tested this model. We demonstrate with both experimental and real life data that reviews for hedonic products are perceived as less helpful than reviews for utilitarian products (studies 1-2). Furthermore, in a third study we demonstrate that consumers consider the evaluation of hedonic and utilitarian products as respectively a question of taste and a matter of opinion. Finally, we illustrate how these inferences in terms of tastes and opinions affect the perceived similarity with the reviewer. This perception mediates the relationship between utilitarian and hedonic goals and the perceived helpfulness of online reviews (study 3).

STUDY 1: THE HELPFULNESS OF ONLINE REVIEWS

The purpose of study 1 was to examine if the perception of helpfulness for online reviews differs between the two types of products. In particular we test the hypothesis that online reviews for utilitarian products are perceived as more helpful than online reviews for hedonic goods.

Method

Sixty-six graduate and undergraduate students (mean age = 20 years, $SD = 1.8$; 36 women) were given a short and conclusive description of two existing fiction and two existing non-fiction books. For each book, they were subsequently provided with five reviews, totaling in 20 reviews (see Appendix 1). They were then asked to evaluate the helpfulness of each review. We selected three positive and two negative reviews for each book from Amazon.com. Next to

the product type (fiction vs. non-fiction book), we included the valence of the reviews (positive vs. negative reviews) and the perceived attractiveness of the books (measured on a 10-point scale) as possible moderators. The latter was measured by a single item, asking the participants how much they would like to have each of the books. The dependent variable was measured by asking respondents how helpful they found the given review on a single item seven-point Likert scale ranging from "not helpful at all" to "very helpful".[1]

We chose books as stimuli, because fiction books, such as novels and fantasy books, tend to be more of a hedonic nature, non-fiction books, such as "how-to-do-books" are more utilitarian (Sen & Lerman, 2007). We tested this assumption with a pretest. Using two multi-item measures (Voss, Spangenberg, & Grohmann, 2003), 25 participants (mean age = 21 years, $SD =$ 1.9; 17 women) were asked to indicate on a seven-point semantic differential scale how four fiction books and four non-fiction books rated on five items referring to the hedonic dimension (fun/not fun, exciting/dull, delightful/not delightful, thrilling/not thrilling, and enjoyable/not enjoyable; Cronbach's α = .92) and five items referring to the utilitarian dimension (effective/ineffective, helpful/unhelpful, functional/not functional, necessary/unnecessary, and practical/impractical; Cronbach's α = .95). We included both relative popular and unpopular books, collected from different sales ranks from Amazon.com. Fiction books were perceived as significantly more hedonic than non-fiction books (M = 5.03 vs. M = 2.79, $F(1,24)$ = 106.66, $p <$ .001), whereas non-fiction books are perceived as significantly more utilitarian than fiction books (M = 5.50 vs. M = 2.76, $F(1,24)$ = 108.19, $p <$ .001).

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[1] Helpfulness in this study and in the following studies was measured with a single-item measure. This single-item measure taps directly into how helpful respondents perceived the reviews. Moreover, previous research (e.g., Bergkvist & Rossiter, 2007) recommends the use of single-item measures when possible.

Results

We hypothesized that consumers perceive reviews for hedonic goods as less helpful than reviews for utilitarian goods. Therefore we compare the mean perceived review helpfulness for fiction books and non-fiction books. Since all participants evaluated all 20 reviews and since there were 5 reviews for each book, we essentially have repeated data. Therefore we used a multilevel regression analysis[2] in which the 20 review evaluations were nested in participants, and each participant was associated with its own random intercept. The error degrees of freedom of the statistical tests were estimated using Satterthwaite's approximation, which may result in fractional degrees of freedom (Littell, Stroup, & Freund, 2002). The interpretation of the parameter estimates is the same as with ordinary linear regression; merely the standard errors of the parameters are adjusted to obtain correct test statistics (Snijders & Bosker 1999). Our model included not only product type (fiction vs. non-fiction book), but also the valence of the review and the perceived attractiveness of the books as control variables. To explore possible moderation effects, we also included the interactions between these two control variables and product type.

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[2] Multilevel regression analysis allows the analysis of repeated measures data that cannot be handled with repeated measures ANOVA. In our case, repeated measures ANOVA cannot deal with the data because our model includes review valence that varies within books, rather than merely across books. Multilevel regression requires the researcher to specify the appropriate error structure, guided by statistical criteria like Akaike's Information Criterion (AIC). In all our analysis, the most suitable error covariance structure was a compound symmetrical error structure (AIC = 3979.62 is smaller than for any other covariance structure), implying a constant correlation between any two errors. This structure is identical to the assumed structure in repeated measures ANOVA. The presented model has the best fit (-2 Restricted Log Likelihood = 3975.62 is smaller than for other tested models).

Table 1: Parameter estimates for the multilevel regression model predicting perceived review helpfulness (Study 1)

Parameter	Estimate	Standard Error	t – value	p – value
Intercept	3.17	.14	22.33	< .001
Product type (non-fiction = 1; fiction = 0)	.35	.12	3.01	.003
Review valence (positive = 1; negative = 0)	.27	.08	-3.36	.001
Product type x review valence	.04	.11	-.32	.75
Attractiveness	.05	.02	3.01	.003
Product type x attractiveness	-.002	.02	-.11	.92

Our analyses show that the type of the product the review was written about has an influence on the perceived helpfulness of the review. As illustrated in Table 1, the difference between fiction (coded 0) and non-fiction books (coded 1) was significant (β = .35, t(1281.60) = 3.01, p = .003), such that on average the perceived helpfulness was greater for non-fiction book reviews than for fiction book reviews (M = 3.86 vs. M = 3.55). Subsequently, we looked at the influence of two possible moderators: the valence of the review and the perceived attractiveness of the books. The overall model shows that while there is a significant main effect of review valence (β = .27, t(1248.79) = -3.36, p = .001), indicating lower review helpfulness for negative reviews, the interaction effect with product type is not significant (β = .04, t(1248.79) = -.32, p = .75). The same was found for perceived attractiveness. While the main effect is significant (β = .05, t(1299.28) = 3.01, p = .003), demonstrating that reviews for desired products are perceived as more helpful, the interaction effect with product type is not at all significant (β = -.002, t(1296.10) = -.11, p = .92). Thus, neither review valence nor the attractiveness of the books moderated the relationship between product type and review helpfulness.

Discussion

These results provide initial evidence for our hypothesis that the type of product has an influence on the perceived helpfulness of reviews. Reviews for hedonic products are perceived as significantly less helpful than reviews for utilitarian products. Moreover, we found that this effect is not moderated by review valence or by the attractiveness of the reviewed books. There are, however, two shortcomings to the current experiment. First, the effect of product type on the helpfulness of reviews has been measured for only a very limited number of books. Second, the included reviews were not perfectly equal, making comparisons between them somewhat difficult. To address these two limitations, study 2 uses data from the public website of Amazon.com. As this allows inclusion of a far greater sample of products and reviews, it renders it very implausible that idiosyncratic review or product features drive our results. In addition, this approach validates our previous findings using real behavior.

STUDY 2: AMAZON REVIEWS

The goal of study 2 is to provide converging evidence for the effect of product type on the perceived helpfulness of online reviews. Therefore, we investigate if the effect found in study 1 can be replicated using real data from Amazon.com. Amazon.com is one of the largest online retailers with one of the most active reviewing communities online. Their bidirectional WOM network not only allows consumers to provide and read reviews, but also to judge the usefulness of the review message. The proportion of helpfulness votes a review receives serves as an indicator for the helpfulness of the review (Chevalier & Mayzlin, 2006).

Method

Review data for 1,200 reviews were extracted for both fiction and non-fiction books. This resulted in data for 58 (52.7 %) fiction books and 52 (47.3 %) non-fiction books. We registered data for up to 20 reviews for each product in our sample, resulting in 600 reviews for each type of book. To ensure that both relatively popular and relatively unpopular products are taken into account, we included products with different sales ranks, with groups of products ranked 1st to 25th, 101st to 125th, 501st to 525th, 5001st to 5025th, and 10,001st to 10,025th.

A number of independent variables were included in our model. Our main variable of interest is the product type, which was measured as a binary variable, with 0 being fiction and 1 being non-fiction books. In addition, we collected information about the sales rank of the product and the reviewers' rating of the product. Amazon.com reviewers provide a numerical star rating from one to five stars, which indicate the tendency of a review in favor or against a product. This rating is used as our measure of review valence (centered with 3 as the midpoint). The average online customer review is positive (average star rating of 4.39). Sales rank, measured at the moment of data collection, ranges from 1 for the top-sold product to 10,025. The dependent variable in our model is the proportion of readers that found a review to be helpful (i.e., direction of the vote). We derived this variable by dividing the number of people who voted that the review was helpful by the total votes in response to the "was this review helpful to you" question on Amazon.com.

We also controlled for a potential confounding effect of the position of a review. Review position is the position on the list of reviews that were on screen at the time of data collection. To avoid spurious relationships between the dependent and the independent variables caused by

review position, we studied the relationship between them. Since no substantial correlations were found (all correlations were below an absolute value of .20), review position does not appear to be a confounding variable.

Results

To test whether real reviews are perceived as less helpful for fiction than for non-fiction books, we estimated a regression model with the helpfulness of the reviews as the dependent variable and the product type, the star rating and the log-transformed sales rank as independent variables; we also included all interactions between these predictors. In order to facilitate the interpretation of the results, star rating was centered. Since we included multiple reviews for each product, reviews are nested within products. Therefore we used multilevel regression analysis[3]. Table 2 lists an overview of the results.

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[3] As in Study 1, the reviews are nested within the books and we use a multilevel regression. Our model includes review star rating that varies within books, rather than merely across books. We specify the compound symmetrical error as the most appropriate error structure (AIC = 11594.98 is smaller than for any other covariance structure), implying a constant correlation between any two errors. The presented model has the best fit (-2 Restricted Log Likelihood = 11590.98 is smaller than for other tested models).

Table 2: Parameter estimates for the multilevel regression model predicting the proportion of voters that found a review helpful (Amazon.com data; Study 2)

Parameter	Estimate	Standard Error	t – value	p – value
Intercept	57.95	6.07	9.55	< .001
Product type (non-fiction = 1; fiction = 0)	-14.69	8.52	-1.72	.086
Log sales rank	-.08	2.22	-.04	.972
Product type x log sales rank	8.17	3.32	2.46	.015
Star rating	.08	2.76	.03	.976
Product type x star rating	3.86	3.79	1.02	.308
Log sales rank x star rating	2.45	1.04	2.34	.019
Product type x log sales rank x star rating	-1.72	1.54	-1.12	.265

Our results show that 67.21 % of the voters found the review to be helpful, which is in line with former research (e.g., Chevalier & Mayzlin 2006; Mudambi & Schuff 2010). Corroborating the results of the previous study, the proportion of readers that found a review helpful was greater for non-fiction books (68.45 %) than for fiction books (65.98 %), although this difference was reversed and only marginally significant (β = -14.69, $t(188.59)$ = -1.72, p = .086). We did, however, find a significant moderation effect by the logarithmically transformed sales rank (β = 8.17, $t(258.82)$ = 2.46, p = .015). To understand this interaction, we estimated the relationship between product type and review helpfulness for different sales ranks. As shown in Figure 2, while reviews for top-ranked fiction and non-fiction books did not significantly differ in perceived helpfulness, reviews for books situated lower on the bestseller list (significant when sales rank > 400) were significantly more helpful for non-fiction books than for fiction books (β = 6.04, $t(108)$ = 2.04, p = .044). Investigating the role of review valence, we found no significant interaction between the number of stars given by the reviewer and the product type (β = 3.86, $t(1191.94)$ = 1.02, p = .31) or between the number of stars, the product type and the sales rank (β

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= -1.72, $t(1192.94) = -1.12$, $p = .27$). Whether a review is positive or negative does not affect the relationship between product type and perceived helpfulness.

Figure 2: Interaction between product type and log sales rank (Study 2)
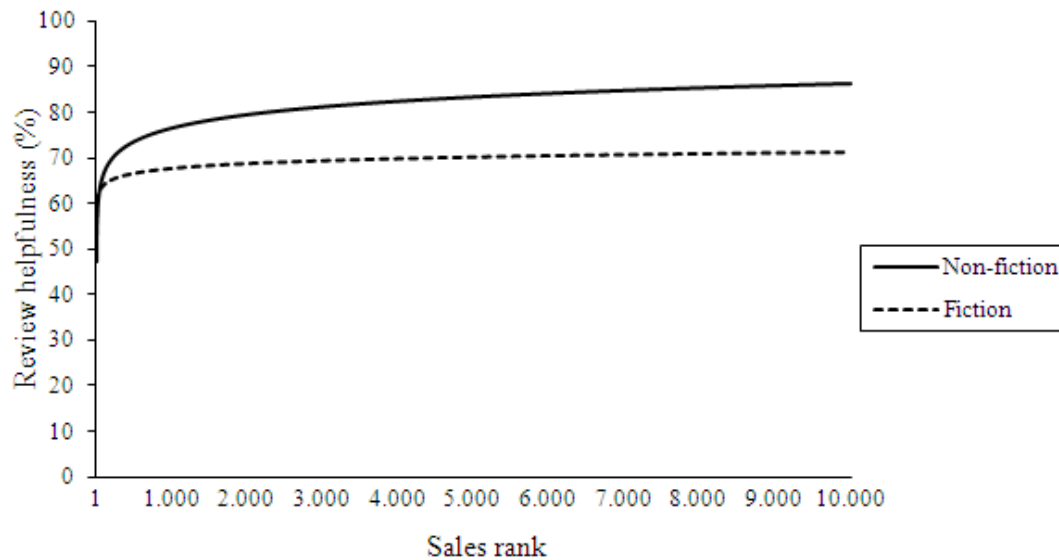
Discussion

The data reported in this study provide further evidence for our hypothesis that the product type influences the perceived helpfulness of online reviews. More specifically, we found that online reviews for utilitarian goods (non-fiction books) are perceived as more helpful than online reviews for hedonic goods (fiction books). However, this relationship is influenced by the relative popularity of the product. For books that are high on the bestseller list, the perceived helpfulness was generally low for both reviews for non-fiction books and reviews for fiction books. A possible explanation involves the decreased uncertainty that comes with popular products. The major reason to use online reviews is to obtain quality information in order to

reduce risk (Forsythe & Shi, 2003). However, being popular in itself signals a higher quality. So, the popularity of a product serves as a social cue that reduces perceived risk (Zhu & Zhang, 2010). In addition, popular books should receive more attention from other sources, both in online and offline channels, such as reviews in magazines and national newspapers (Hu et al., 2008; Hu & Li, 2011). Both elements make online reviews relatively superfluous. Supporting this explanation, on average, perceived review helpfulness is positively related to sales rank ($\beta = 6.13$, $t(105.15) = 4.44$, $p < .001$) such that reviews are generally considered more helpful for less popular books.

The first two studies demonstrated that reviews for hedonic goods are perceived as less helpful than reviews for utilitarian goods. Study 3 examines if quality judgments of hedonic products are perceived as being more a question of taste, while the quality of utilitarian goods is seen as more reflecting a general opinion. Furthermore we will examine the relationship between taste-opinion inference and perceived review helpfulness. It will demonstrate how the difference in quality assessments affects reviewer similarity, which in turn affects review helpfulness.

STUDY 3: OPINIONS, TASTES AND SIMILARITY

The goal of this study is to test if perceived similarity explains the effect of product type (utilitarian vs. hedonic) on perceived review helpfulness. We hypothesize that consumers perceive the quality judgment of a hedonic good to be a question of taste and consequently that they perceive the writer of a related online review as less similar. In contrast, we expect that consumers perceive the quality judgment of utilitarian products to be a matter of general opinion and, hence, perceive reviewers as more similar. The more similar others are perceived to be, the

more others' opinions could make a valuable input to consumers' decision making process. Next to measuring similarity, we also manipulated the availability of similarity cues to test the underlying process. Our hypotheses imply that the presence of a cue implying high similarity with the reviewer would eliminate the effect of product type on review helpfulness. To measure the extent to which a product is viewed as a matter of opinion versus taste, we developed and tested a scale to measure.

Furthermore, we control for two possible alternative explanations. First, consumers' attributions could explain the difference in review helpfulness (Sen & Lerman, 2007). In case of a utilitarian goal, readers might attribute the review content to external (product related) motivations. Consequently, reviews are perceived as reflective of the actual product performance. For hedonic decisions, in contrast, readers might believe that the review is based on internal (non-product related) motivations and therefore that the content is not representative of the actual product performance. Consequently, reviews for utilitarian products would be seen as more helpful.

Alternatively, while the consumption of hedonic good often provides pleasure immediately, utilitarian goods mostly provide delayed benefits and are consumed with a longer-term focus (Loewenstein, Read, & Baumeister, 2003). Hence, decisions to purchase them might be perceived as more important (Wertenbroch, 1998). In contrast, sometimes hedonic consumptions, such as holidays, are seen as more important. Since higher perceived importance of obtaining a good decision outcome might also explain why review information is seen as more helpful we included it in our study.

Method

Ninety members of the department's panel (mean age = 24 years, *SD* = 8.76; 68 women) participated in this study and were randomly assigned to the conditions of a 2 (utilitarian vs. hedonic goods) x 2 (control condition vs. similarity condition) between-subjects design. Participants were asked to read a scenario about getting a massage and to answer the questionnaire that followed. While our previous studies manipulated hedonic and utilitarian consumption goals by using fiction and non-fiction books, in Study 3 we selected a service that possesses both hedonic and utilitarian characteristics. With a scenario (Rick, Cryder & Loewenstein, 2008) we emphasize the respective dimension of the service, while holding the service and, hence, the review constant. Participants in the hedonic condition were given the following scenario:

"Imagine that you really like massages. To indulge yourself you want to get a professional massage. By getting this massage, you hope you can relax and have a good time."

Participants in the utilitarian condition read instead the following scenario:

"Imagine that you have been suffering back pains for some time. Your doctor recommends you a therapeutic massage. By getting this massage, you hope you will be relieved of the back pain."

Furthermore, they were given the description of a particular wellness center offering massages and were randomly assigned to either the control condition or the similarity condition. Respondents in the control condition were given the review (which was negative in valence) immediately. The review was:

" I was totally unsatisfied with the massage. I didn't have the feeling that the staff knew

what they were doing and afterwards I still had back pain. Moreover, I didn't enjoy this

experience and wasn't able to relax."

Respondents in the similarity condition were first asked to complete a questionnaire measuring

their perceived importance of several relevant attributes of massages (e.g., price, relaxation,

technique). They were told that, based on their answers, we would be able to give them a review

by a reviewer who is similar to them. Consequently, they were given a review with the label

"The reviewer is highly similar to you (92%)".

Both sets of participants where then asked to evaluate the massage in the scenario with

the hedonism and utilitarianism scales (cf. Study 1; respectively $\alpha = .88$ and $\alpha = .81$). Moreover,

we assessed participants' quality judgment inferences in terms of opinions or taste with a four-

item measure ($\alpha = .70$) we developed, as explained later in this study. Participants then were

asked to evaluate the helpfulness of the review on a seven-point scale, with 1 being "not helpful

at all" and 7 being "very helpful". We also tested participants' perceived similarity with the

reviewer, by using the Inclusion of the Other in the Self (IOS) scale (Aron, Aron, & Smollan,

1992). With this seven-point scale, a higher score indicates a closer connectedness with the

reviewer.

To control for the alternative theories of internal and external motivations, we used the

questions developed by Sen and Lerman (2007). External motivations were measured using three

items: (1) To what extent do you think that the above review accurately reflects how good the

massage is?; (2) The motive behind the reviewer posting the review was to accurately inform

other customers about the quality of the massage; and (3) I feel the reviewer's comments are

based on his/her true experience/feelings. The three items loaded on a single factor capturing

57.87% of the overall variance for the dependent variables ($\alpha = 0.64$). A single item measured attributions about internal motivations: To what extent do you feel other reasons – reasons having nothing to do with the quality of the massage – influenced the reviewer's opinions.

Finally, the alternative explanation of decision importance was tested by assessing respondents' perceived decision importance, using a seven-point scale with 1 being "not important at all" and 7 being "very important".

Measuring Taste-Opinion Inferences

To assess peoples' inferences with regard to the opinion versus taste dimension, we needed a valid and reliable measure. According to Spears et al. (2009), we can locate the two constructs on a continuum running from objective to subjective. While taste was described as personal and subjective, opinions are more general, objective and could be related to a correct position. Hence, we conceptualize opinions and taste as a bipolar construct. Our measure consists of four questions including items about objectivity, consensus, the existence of a correct position, and the reflection of a general opinion (as summarized in Table 3). Participants had to respond to these four questions on a seven-point Likert-scale, with a higher value indicating an opinion inference and a lower value indicating a taste inference.

To test the validity of our taste versus opinion inference measure, in a within-subject design 72 participant (mean age = 23 years, *SD* = 6.7; 47 women) evaluated a variety of objects reflecting opinions or tastes on the four items. The pretest examined the following objects: basic rules taught to children, a job candidate's professional skills, human rights, nutritional qualities of a dish, and the quality of an oven as *opinion*-related objects and a new style of music, a

person's personality, plastic surgery, the tastiness of a dish and the quality of a new movie as *taste*-related objects. The results demonstrate that taste-related objects score significantly lower on the 4-item scale than opinion-related objects (β = -2.14, t(647) = -30.09, $p < .001$). All ten objects score also significantly different from the scale-midpoint ($p < .05$), in the intended direction. An exploratory factor analysis was conducted for each object separately' because a single factor analysis with the data of all ten objects pooled together would violate the assumed independence of observations. We found that for each of the ten objects, the first (biggest) factor accounted for more than 50% of the variance in the original data. Measured by the four items, the taste versus opinion scale exhibited high reliability for all ten objects (ranging from α = .70 to α = .82, averaging α = .77).

Table 3: The opinion versus taste scale

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1. Can the object be judged objectively?
   (Not at all objectively – very objectively)
2. Would people exhibit consensus about the object?
   (No consensus at all – high consensus)
3. Does a correct position towards the object exist?
   (No correct position at all – definitely a correct position)
4. Does the evaluation of the object depend on personal taste or a general opinion?
   (Depends on personal taste – depends on a general opinion)

Results

Manipulation Check and Review Helpfulness. We first tested if our manipulation of the hedonic and the utilitarian consumption goal was successful. As intended, the functional massage

was evaluated significantly higher on the utilitarian scale ($M = 5.81$ vs. $M = 4.67$; $F(1,88) = 29.28$, $p < .001$) and lower on the hedonic scale ($M = 4.06$ vs. $M = 5.14$; $F(1,88) = 27.44$, $p < .001$) than the hedonic massage. We then tested whether we could replicate the effect of product type (utilitarian vs. hedonic massage) on perceived helpfulness. As illustrated in Figure 3, in the *control condition*, the perceived helpfulness of the review was greater in the utilitarian condition than in the hedonic condition ($M_{ut} = 5.24$ vs. $M_{hed} = 4.61$; $F(1,46) = 4.22$, $p = .046$). In the *similarity condition*, this difference in helpfulness disappeared ($M_{ut} = 4.90$ vs. $M_{hed} = 5.05$; $F(1,40) = .13$, $p = .72$).

Figure 3: The effect of the utilitarian vs. hedonic goal on review helpfulness (Study 3)
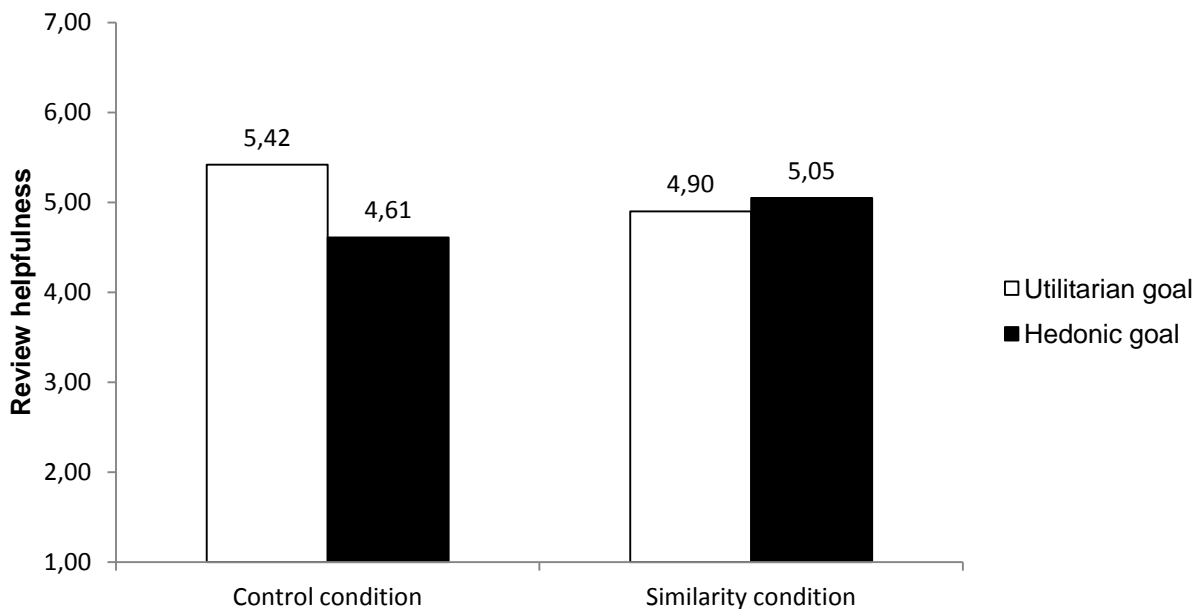
Opinion versus Taste. The results indicate that the review for the utilitarian massage was perceived as more reflective of a general opinion than the quality judgment of the hedonic massage ($M_{ut} = 4.28$ vs. $M_{hed} = 3.59$; $F(1,88) = 12.85$, $p = .001$). We tested the role of product

quality inferences (taste vs. opinion inferences) in the relationship between product type and perceived review helpfulness. The results provide evidence for a moderated mediation model (Hayes, 2012). In the control condition, the consumption goal significantly affected both the helpfulness of online reviews (β = -.63, $t(46)$ = 2.05, p = .046) and the inferences about quality (β = -.68, $t(46)$ = 2.48, p = .017). In turn, the more the quality assessment is considered a matter of opinion, the more helpful reviews are judged to be (β = .39, $t(46)$ = 2.57, p = .014). In a simultaneous regression predicting review helpfulness, participants' taste-opinion inferences were still a marginally significant predictor (β = .32, $t(45)$ = 1.98, p = .054), whereas the effect of consumption goal was no longer significant (β = -.42, $t(45)$ = -1.31, p = .20). A bootstrap analysis for the indirect effect confirmed that the mediation effect was significant (95% CI [-.63, -.002]). The mediation effect was, however, no longer significant when similarity was high (95% CI [-.32, .50]). While the relationship between consumption goal and taste-opinion inferences was still significant (β = -.68, $t(40)$ = -2.56, p = .014), there was no significant link between these taste-opinion inferences and review helpfulness (β = -.09, $t(40)$ = -.39, p = .70).

The Role of Similarity. Why did the effect between the inferences about the quality inferences and the review helpfulness disappear under heightened similarity between reader and reviewers? Our findings suggest that under normal circumstances (control condition), perceived similarity is higher when the quality is seen as more general (opinion) (β = .61, $t(46)$ = 3.36, p = .002). Interestingly, people also perceive reviewers as more similar to them when having a utilitarian consumption goal as when having a hedonic consumption goal (M_{ut} = 3.16 vs. M_{hed} = 2.43; $F(1,46)$ = 3.49, p = .068). Consequently, a higher perceived similarity is related to a higher review helpfulness (β = .42, $t(46)$ = 4.19, $p < .001$). We find support for a multiple mediation

model, as illustrated in Figure 4.[4] A bootstrap analysis shows that this multiple mediation is significant (95% CI [-.35, -.03]). To test the multiple mediation model when high similarity is induced, we used a separate mediation model since the PROCESS macro does not support a moderated mediation in a multiple mediation model. When high similarity is induced, the relationship between taste-opinion inferences and perceived similarity to the reviewer becomes not significant ($\beta = .07$, $t(40) = .25$, $p = .80$), since people feel rather similar in general. Consequently, the mediation is no longer significant (95% CI [-.13, .21]).

Alternative Explanations.   A secondary goal of this study was to test if the perceived similarity explanation holds when we control for possible alternative explanations. To test the role of alternative theories, we look at the results of the control condition. One alternative theory is that readers make inferences about the reviewer's motivations. Having a utilitarian (vs. a hedonic) goal, consumers might believe that the reviewer was more externally (vs. internally) motivated. Because external motivations are more objective, reviews are seen as more helpful in the utilitarian condition (Sen & Lerman, 2007). We find no significant difference in external attributions between the utilitarian versus hedonic scenario ($M_{ut} = 4.60$ vs. $M_{hed} = 4.23$, $F(1,46) = 2.20$, $p = .14$). In contrast, respondents make more reviewer-related attributions in the hedonic condition than in the utilitarian condition ($M_{ut} = 4.12$ vs. $M_{hed} = 4.83$, $F(1,46) = 4.17$, $p = .047$).

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[4] Hypothesis 2 proposes that the effect of product type on review helpfulness is driven by the consecutive processes of preference infetrences (opinion vs. Taste) and similarity inferences. While this model is supported by both our theoretical framework and the results, we test the alternative sequence of consumption goal → perceived simiarity → opinion inferences → perceived helpfulness. The results of a bootstrap analysis don't support this multiple mediation, as the indirect effect is not significant (95% CI [-.17, .02]).

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Figure 4: Multiple mediation of opinion and similarity inferences as a function of manipulated similarity (Study 3)

Control condition
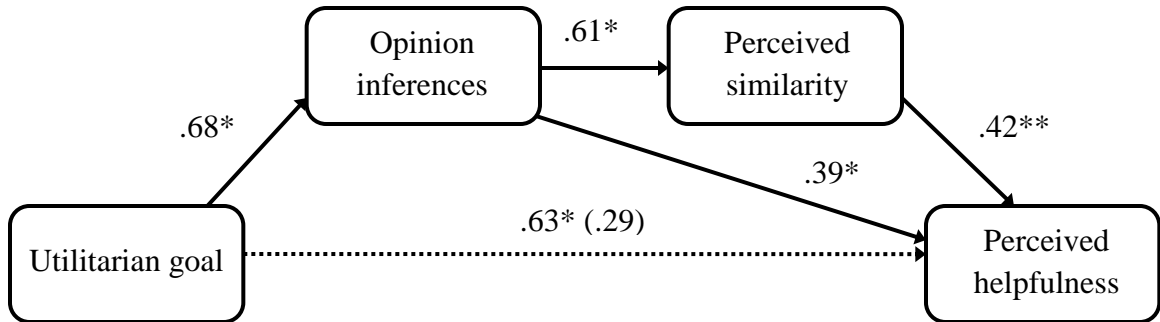
Similarity condition
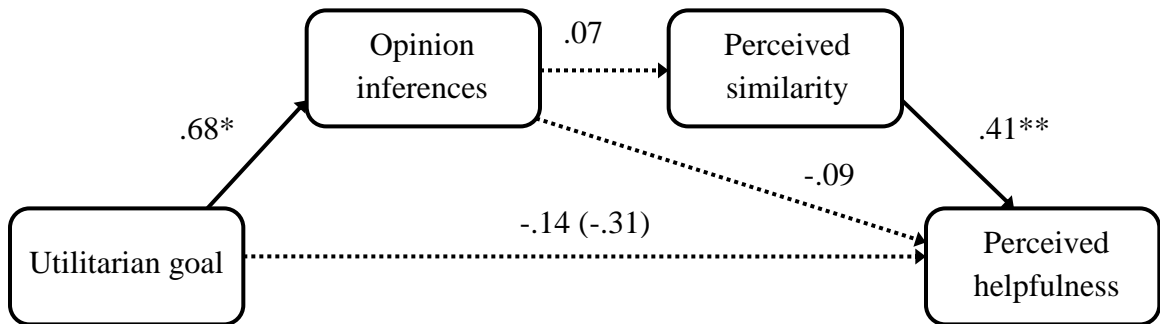
Notes: * *p* < .05; ** *p* < .001

Another possible explanation is the perceived importance of the decision. As such, a massage for health benefits might be perceived as more important than a hedonic massage, making the review information more important. Unexpectedly, the findings show that the respondents perceive the outcome of a hedonic decision as marginally significantly more important than the outcome of an utilitarian decision (M_{ut} = 5.96 vs. M_{hed} = 6.35, $F(1,46)$ = 3.43, p = .071).

Table 4: Test of similarity inferences and alternative explanations

Alternative theory	Effect of consumption goal (utilitarian vs. hedonic)			Effect on review helpfulness	Mediation test
Similarity inferences	Utilitarian	$M = 3.16$	$F(46) = 3.49$, $p = .068$	$\beta = .32$ $t(43) = 3.66$ $p = .001$	[.002, .53]
	Hedonic	$M = 2.43$			
External attributions	Utilitarian	$M = 4.60$	$F(46) = 2.20$, $p = .14$	$\beta = .69$ $t(43) = 4.39$ $p < .001$	[-.044, .74]
	Hedonic	$M = 4.23$			
Internal attributions	Utilitarian	$M = 4.12$	$F(46) = 4.17$, $p = .047$	$\beta = .06$ $t(43) = .56$ $p = .58$	[-.32, .08]
	Hedonic	$M = 4.83$			
Perceived importance	Utilitarian	$M = 5.96$	$F(46) = 3.43$, $p = .071$	$\beta = -.05$ $t(43) = -.31$ $p = .76$	[-.14, .14]
	Hedonic	$M = 6.35$			

We test the robustness of the similarity explanation by testing if perceived similarity is still a significant predictor of review helpfulness when we include the internal and external attributions, and the perceived importance in the model. We estimated a regression model with the review helpfulness as the dependent variable and the perceived similarity, external and internal attributions, and the perceived importance as independent variables. The results (see Table 4) show that while external attributions also significantly affect the perceived review helpfulness ($\beta = .69$, $t(43) = 4.39$, $p < .001$), the respondents' similarity inferences are still a significant predictor of the review helpfulness ($\beta = .32$, $t(43) = 3.66$, $p = .001$). The other included variables have no significant effect. A multiple mediation model, however, illustrates that only the perceived similarity mediates the effect of consumption goal on review helpfulness (95% CI [.002, .53]).

Discussion

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Study 3 replicated the findings of the previous studies and provided evidence for our hypothesis that reviews are less helpful when people have a hedonic consumption goal than when they have a utilitarian consumption goal. Furthermore we found evidence for the underlying process of this difference in helpfulness. We demonstrate the difference between hedonic and utilitarian products influence the opinion-taste inferences consumers make about a product's quality assessment, which in turn affects the perceived similarity of the reviewer. More specifically, we find that reviews are perceived as less helpful for hedonic products, since their quality assessment is considered of a more subjective and personal nature (taste), which causes reviewers to be perceived as less similar. The quality assessment of utilitarian products, in contrast, is considered as more general and, consequently, reviewers are perceived as more similar. This, in turn, makes reviews more helpful. Our results also show that these findings hold when we control for alternative explanations.

GENERAL DISCUSSION

Online reviews have become one of the most important decision aids for consumers and are a prominent part of the modern online environment. Nonetheless, online reviews are not equally helpful under all circumstances. Previous studies have found that characteristics of the review, the consumer and the reviewed product itself influence the perceived quality (e.g., Doh & Hwang, 2009; Mudambi & Schuff, 2010). The goal of the current research was to investigate the role of one important product characteristic: the difference between utilitarian and hedonic products. Drawing on the inference-making literature, we illustrate that the difference between

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utilitarian and hedonic product can cue people to feel respectively more or less similar to the reviewer of the product.

Consistent findings across three studies demonstrate that reviews for hedonic goods or services are perceived as less helpful than reviews for utilitarian products. Study 1 and 2 demonstrate with experimental data and data collected from Amazon.com respectively, that consumers find online reviews for utilitarian goods more helpful than for hedonic goods. Moreover, the online review data (study 2) indicate that the difference in review helpfulness between the two product types disappears for products that are located on the top of the bestseller list and thus are more popular. This popularity in itself signals a certain quality, decreasing the usefulness of online reviews for utilitarian goods to the level of hedonic goods.

Study 3 illustrates that the difference in review helpfulness between hedonic and utilitarian goods can be explained by the perceived reviewer similarity. Since utilitarian goods are more functional and objectively evaluable, consumers believe that their quality perceptions of these products can be validated by others' opinions. This, however, is not the case for hedonic products. Quality evaluation of hedonic goods, which are affective and sensory in nature, is perceived to reflect individual taste. This difference in the perceived objectivity of a product makes people feel respectively more or less similar to the reviewer. People think it is less likely that another person would share the same taste. Reviewers of utilitarian goods are therefore perceived as more similar by the consumers and reading online reviews can therefore help to reduce consumers' uncertainty about product quality.

It is important to conquer a potential source of confusion. One might argue that reviews for hedonic products should be more helpful, since uncertainty is higher for these products. After all, the quality of hedonic products is based on factors, such as joy and pleasure that are hard to

quantify. Hence, while consumers might be able to evaluate the quality of utilitarian products based on functional attributes (e.g., the number of pixels of a computer screen), this might not be possible for hedonic products. It is important, however, to distinguish the hedonic/utilitarian concept from the experience/search good concept (Huang, Lurie, & Mitra, 2009). While the two concepts often go together (utlitarian products are often search goods and hedonic products are often experience goods), in our studies we only used experience goods and services (i.e., books and massages). Because of the availability of specific product information, online reviews for search goods will probably be less helpful in general

Theoretical and Practical Contributions

Reviews are used for an increasing array of products and services and understanding how consumers react to reviews is important. The current research, therefore, contributes to the literature in several ways. First, our findings contribute to the existing literature on perceived similarity. Perceived similarity with the communicator of information is expected to be influenced in two ways. According to the false consensus effect (Hoch, 1988; Marks & Miller, 1987; Ross et al., 1977), people have the tendency to perceive other people as more similar based on a few shared characteristics that can be given in form of reviewer information. Also, people can infer from the communicated message itself, whether or not the communicator is similar to them. Our results suggest that the product type can also affect the perceived similarity. Consumers perceive writers of reviews for utilitarian goods as more similar than writers of reviews for hedonic goods. More empirical work is certainly needed to further examine this finding and its implications.

Second, by combining the existing literatures about hedonic and utilitarian products and about opinions and taste, we provide insight into the underlying reasons of this effect. In the existing literature it is recognized that hedonic and utilitarian products offer different benefits to the consumer. While hedonic products offer experiential enjoyment, utilitarian products offer practical and functional benefits. The current research adds another dimension to this distinction by connecting the hedonic-utilitarian product dimension to the taste-opinion quality evaluation dimension (e.g., Spears et al., 2009). We demonstrated that quality inferences for hedonic products are perceived to be a question of taste and for utilitarian goods as a matter of opinion. While the first is highly dependent on ones' personal thoughts and is rather subjective, quality inferences of utilitarian products are rather objective implying that a "correct position" exists. Consequently, this research also contributes to the inference-making literature. People's expected probability that other persons share their taste is far lower than their expectation that others share their opinions. From this difference in expected preference heterogeneity a notion of similarity is conveyed. Specifically, we showed that being aware of the relative common (vs. subjective) character of a product causes inferences of higher (vs. lesser) similarity to other consumers of the product.

Third, this research also contributes to the literature of online reviews, by showing that the nature of a product (hedonic versus utilitarian) influences the perceived value of online reviews. Previous research has shown that online information sources, such as online reviews, are perceived as relative less important for hedonic than for utilitarian products (Cheema & Papatla, 2010). It has also been shown that negative online reviews for hedonic products are seen as less helpful, since consumers' believe that reviewers are guided by internal or personal reasons as opposed to true experiences and feelings (as is the case for utilitarian goods; Sen &

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Lerman, 2007). The current research offers an alternative explanation for the difference in review helpfulness between hedonic and utilitarian goods. Our findings support the view that online reviews are able to validate general opinions, but not personal taste. Since the quality evaluation of hedonic products is perceived to depend on personal and subjective preferences (i.e., taste), online reviews are not be able to reduce uncertainty regarding these products' quality and hence they are less helpful than online reviews for utilitarian products. The quality evaluation of utilitarian goods is seen as a question of a general, more objective opinion that can benefit from others' opinions.

In addition to its theoretical contribution, these findings also have important marketing implications. Many firms have taken advantage of online customer reviews as a new marketing tool (Dellarocas, 2003). Companies such as Amazon.com have introduced and have even become famous for their customer online reviews. However, online reviews are expected to influence product sales only when consumers' reliance on online reviews is sufficiently high at the time they make purchase decisions (Zhu & Zhang, 2010). Reviews that are perceived as helpful by consumers therefore have a greater potential value to companies, as reflected in customer acquisition and increased sales (Chevalier & Mayzlin, 2006; Clemons, Gao, & Hitt, 2006). The current research shows that, while both hedonic and utilitarian products are widely represented in online stores and a countless number of reviews are written for both of them, reviews for utilitarian products are valued more by customers. Following the argumentation above, resources allocated to reviews for utilitarian products are therefore expected to have higher returns in terms of influencing consumers. In addition, consumers of hedonic goods could benefit from a recommendation system that provides personalized reviews or reviews that clearly indicate the similarity of the reviewer.

Directions for Future Research

        This research offers a number of interesting directions for future study. One is to further examine the relationship between product type (utilitarian vs. hedonic), taste-opinion inferences and perceived similarity. While the current research demonstrated that the product type has an effect on the perceived similarity of the writer of an associated review, further research could test if this effect is limited to the online review context or if it could be generalized to offline contexts. As such it might be interesting to investigate if sellers of utilitarian products would be more convincing, because they are assumed to be more similar. Moreover, triggering a collective self could attenuate the negative effect of hedonic products on review helpfulness, while triggering an individual self could attenuate the positive effect of utilitarian products on review helpfulness. Furthermore, perceived similarity could also be affected by opinion or taste inferences, even outside the context of products. For instance, being confronted with a song, which probably is subject to taste, people might see other people as less similar. In contrast, when facing an opinion-related subject, such as human rights, others might be perceived as more similar.

        While our results show that product type has an effect on perceived similarity, consumers themselves may also differ in how similar they perceive others. In particular, some consumers appear to have stronger uniqueness motives. Research on consumers' need for uniqueness suggests that a message indicating high similarity to others enhances compliance for those with a low need for uniqueness, while it diminishes compliance for those with a high need for uniqueness, triggering distinctiveness thoughts and behaviors (Irmak, Vallen, & Sen, 2010;

Snyder & Fromkin, 1977). Similarly, we could expect that communicating similarity to the reader of a review only has an effect when they have a low need for uniqueness. For readers with a high need for uniqueness, in contrast, these similarity efforts might have little effect. This might especially affect the perceived helpfulness of reviews for hedonic goods.

Finally, it might be interesting to look into the differences in content for reviews on utilitarian and hedonic products. Review content could moderate the relationship between product type and review helpfulness. After all, hedonic and utilitarian products relate to different content related needs. Consumers of hedonic products may benefit from a better description of the sensational experiences of consuming the good, while consumers of utilitarian products may be more interested in descriptions of functional details. By making the content of the reviews more in line with content related needs, reviews for hedonic products could become more helpful, attenuating the difference in review helpfulness between hedonic and utilitarian products.

Conclusion

In summary, although reviews for both hedonic and utilitarian products are highly common in the only purchasing environment, this research illustrates that consumers perceive them as differently helpful. Our findings provide evidence that consumers perceive the quality of utilitarian goods or services more as a matter of opinion, which increases the perceived similarity towards the reviewer. In contrast, the quality of hedonic goods or services is perceived as a question of taste, which decreases the perceived similarity with the reviewer. The perceived similarity, in turn, influences the helpfulness of the online review. Whether or not a review is

considered helpful turns out to be a question of taste, in more than one sense.

REFERENCES

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, *63(4),* 596-612.

Batra, R., & Ahtola, O.T. (1990).Measuring the hedonic and utilitarian sources of consumer attitude. *Marketing Letters, 2(2)*, 159-170.

Bergkvist, L., & Rossiter, J. R. (2007). The predictive validity of multiple-item versus single-item measures of the same constructs. *Journal of Marketing Research*, *44(2)*, 175-184.

Botti, S., & McGill, A. L. (2011). The locus of choice: Personal causality and satisfaction with hedonic and utilitarian decisions. *Journal of Consumer Research, 37(6),* 1065-1078.

Brock, T. C. (1965). Communicator-recipient similarity and decision change. *Journal of Personality and Social Psychology, 1(6),* 650-54.

Brown, J. J., & Reingen, P. H. (1987). Social ties and word-of-mouth referral behavior. *Journal of Consumer Research, 14(3)*, 350-362.

Burger, J. M., Messian, N., Patel, S., del Prado, A., & Anderson, C. (2004). What a coincidence! The effects of incidental similarity on compliance. *Personality and Social Psychology Bulletin, 30(1)*, 35-43.

Chevalier, J. A. and Mayzlin, D. (2006). The effect of word of mouth on sales: Online book reviews. *Journal of Marketing Research, 43(3)*, 345-354.

Cheema, A., & Papatla, P. (2010). Relative Importance of online versus offline information for internet purchases: Product category and internet experience effects. *Journal of Business Research*, *63(9-10)*, 979-985.

Clemons, E. K., Gao, G. G., & Hitt, L. M. (2006). When online reviews meet

hyperdifferentiation: a study of craft beer industry. *Journal of Management Information Systems*, *23(2)*, 149-171.

Dellarocas, C. (2003). The digitization of word of mouth: promise and challenges of online feedback mechanisms. *Management Science*, *4(10)*, 1401-1424.

Dhar, R., & Wertenbroch, K. (2000). Consumer choice between hedonic and utilitarian goods. *Journal of Marketing Research, 37(1)*, 60-71.

Dick, A., Chakravarti, D., & Biehal, G. (1990). Memory-based inferences during consumer choice. *Journal of Consumer Research 17(1)*, 82-93.

Doh, S. J., & Hwang, J. S. (2009). How consumers evaluate eWOM (electronic word-of-mouth) messages. *CyberPsychology & Behavior, 12(2),* 193-197.

Eggert, A. (2006). Intangibility and perceived risk in online environments. *Journal of Marketing Management*, *22(5-6),* 553-572.

Ennew, C. T., Banerjee, A. K., & Li, D. (2000). Managing word of mouth communication: empirical evidence from India. *International Journal of Bank Marketing*, *18(2),* 75-83.

Feick, L., & Higie, R. A. (1992). The effects of preference heterogeneity and source characteristics on ad processing and judgements about endorsers. *Journal of Advertising, 21(2)*, 9-24.

Forsythe, S. M., & Shi, B. (2003). Consumer patronage and risk perceptions in Internet shopping. *Journal of Business Research*, *56(11),* 867-875.

Gershoff, A. D., Broniarczyk, S. M., & West, P. M. (2001). Recommendation or evaluation? Task sensitivity in information source selection. *Journal of Consumer Research, 28(3),* 418-438.

Goethals, G. R., & Nelson, R. E. (1973). Similarity in influence process-belief-value distinction.

Journal of Personality and Social Psychology, *25(1)*, 117-122.

Gopinath, M., & Nyer, P. U. (2009). The effect of public commitment on resistance to persuasion: The influence of attitude certainty, issue importance, susceptibility to normative influence, preference for consistency and source proximity. *International Journal of Research in Marketing*, *26(1),* 60-68.

Häubl, G., & Trifts, V. (2000). Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing Science, 19(1),* 4-21.

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling. *Manuscript submitted for publication*.

Hirschman, E. C., & Holbrook, M. B. (1982). Hedonic consumption: emerging concepts, methods and propositions. *The Journal of Marketing 46(3)*, 92-101.

Hoch, S. J. (1988). Who do we know? Predicting the interests and opinions of the american consumer. *Journal of Consumer Research*, *15(3),* 315–324.

Hu, N., Liu, L., & Zhang, J. J. (2008). Do online reviews affect product sales? The role of reviewer characteristics and temporal effects. *Information Technology and Management, 9(3),* 201-214.

Hu, Y., & Li, X. (2011). Context-dependent product evaluations: an empirical analysis of internet book reviews. *Journal of Interactive Marketing*, *25(3),* 123-133.

Huang, P., Lurie, N. H., & Mitra, S. (2009). Searching for experience on the web: An empirical examination of consumer behavior for search and experience goods, *Journal of Marketing*, *73(2)*, 55-69.

Huang, Y. K., & Yang, W. I. (2008). Motives for and consequences of reading internet book reviews. *The Electronic Library, 26(1),* 97-110.

Irmak, C., Vallen, B., & Sen, S. (2010). You like what I like, but I don't like what you like: uniqueness motivations in product preferences. *Journal of Consumer Research, 37(3)*, 443-455.

Jiang, L., Hoegg, J., Dahl, D. W., & Chattopadhyay, A. (2010). The persuasive role of incidental similarity on attitudes and purchase intentions in a sales context. *Journal of Consumer Research, 36(5)*, 778-791.

Kardes, F. R., Posavac, S. S., & Cronley, M. L. (2004). Consumer inference: A review of processes, bases, and judgment contexts. *Journal of Consumer Psychology, 14(3)*, 230-256.

Katz, E., & Lazarsfeld, P. F. (1955). *Personal influence*. Free Press, New York, NY.

Littell, R. C., Stroup, W. W., & Freund, R. J. (2002). *SAS for linear models.* SAS Publishing, Cary, NC.

Loewenstein, G., Read, D., & Baumeister, R. F. (2003). *Time and decision: Economic and psychological perspectives on intertemporal choice.* Russell Sage Foundation.

Lynch Jr, J. G., & Srull, T. K. (1982). Memory and attentional factors in consumer choice: Concepts and research methods. *Journal of Consumer Research*, *9(1),* 18-37.

Mano, H., & Oliver, R. L. (1993). Assessing the dimensionality and structure of the consumption experience: evaluation, feeling, and satisfaction. *Journal of Consumer Research, 20(3)*, 451-466.

Marks, G., & Miller, N. (1987). Ten years of research on the false-consensus effect: An empirical and theoretical review. *Psychological Bulletin*, *102(1),* 72–90.

Moore, S. G. (2012). Some things are better left unsaid: How word of mouth influences the storyteller. *Journal of Consumer Research, 38(6),* 1140-1154.

Mort, G. S., & Rose, T. (2004). The effect of product type on value linkages in the means-end

chain: implications for theory and method. *Journal of Consumer Behaviour*, *3*(3), 221-234.

Mudambi, S. M., & Schuff, D. (2010). What makes a helpful online review? A study of customer

reviews on Amazon.com. *MIS Quarterly*, *34(1),* 185-200.

Naylor, R., Lamberton, C., & West, P. M. (2012). Beyond the "like" button: The impact of mere

virtual presence on brand evaluations and purchase intentions in social media settings.

Journal of Marketing, 76(6), 105-120.

Norton, D., Lamberton, C., & Naylor, R. (2013). The devil you (don't) know: Interpersonal

ambiguity and inference making in competitive contexts. *Journal of Consumer Research*,

40(4), in press.

Okada, E. M. (2005). Justification effects on consumer choice of hedonic and utilitarian goods.

Journal of Marketing Research, 42(1), 43-53.

Price, L. L., Feick, L. F., & Higie, R. A. (1989). Preference heterogeneity and coorientation as

determinants of perceived informational influence. *Journal of Business Research*, *19(3),*

227-242.

Racherla, P., Mandviwalla, M., & Connolly, D. J. (2012). Factors affecting consumers' trust in

online product reviews. *Journal of Consumer Behaviour*, *11(2),* 94-104.

Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and spendthrifts. *Journal of

Consumer Research*, *34(6),* 767-782.

Ross L., Greene, D., & House, P. (1977). The false consensus effect: An egocentric bias in social

perception and attribution processes. *Journal of Experimental Social Psychology*, *13(3),*

279–301.

Scarpi, D. (2012). Work and fun on the internet: the effects of utilitarianism and hedonism

online. *Journal of Interactive Marketing*, *26(1),* 53-67.

Sen, S., & Lerman, D. (2007). Why are you telling me this? An examination into negative

consumer reviews on the web. *Journal of Interactive Marketing*, *21(4),* 76-94.

Simons, H. W., Berkowitz, N. N., & Moyer, R. J. (1970). Similarity, credibility, and attitude

change: A review and a theory. *Psychological Bulletin*, *73(1),* 1-16.

Snijders, Tom A. B. and Roel J. Bosker (1999). *Multilevel Analysis. An Introduction to Basic

and Advanced Multilevel Modeling*. Sage Publications: London.

Snyder C. R., & Fromkin, H. L. (1977), "Abnormality as a positive characteristic: The

development and validation of a scale measuring need for uniqueness," *Journal of Abnormal

Psychology*, 86*(5),* 518-527.

Spears, R., Ellemers, N., & Doosje, B. (2009). Strength in numbers or less is more? A matter of

opinion and a question of taste. *Personality and Social Psychology Bulletin*, *35(8)*, 1099-

1111.

Stafford, M. R., Stafford, T. F., & Day, E. (2002). A contingency approach: The effects of

spokesperson type and service type on service advertising perceptions. *Journal of

Advertising, 31(2)*, 17-35.

Stasser, G., & Stewart, D. (1992). Discovery of hidden profiles by decision-making groups:

Solving a problem versus making a judgment. *Journal of Personality and Social

Psychology, 63(3)*, 426-434.

Steffes, E. M., & Burgee, L. E. (2009). Social ties and online word of mouth. *Internet Research*,

19(1), 42-59.

Strahilevitz, M., & Myers, J. (1998). Donations to charity as purchase incentives: How well they

work may depend on what you are trying to sell. *Journal of Consumer Research*, *24(4),* 434-

446.

Suls, J., Martin, R., & Wheeler, L. (2000). Three kinds of opinion comparison: The triadic model. *Personality and Social Psychology Review, 4(3)*, 219-237.

Vinokur, A., & Burnstein, E. (1978). Depolarization of attitudes in groups. *Journal of Personality and Social Psychology*, *36(8),* 872-885.

Voss, K. E., Spangenberg, E. R., & Grohmann, B. (2003). Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of Marketing Research, 40(3)*, 310-320.

Wertenbroch, K. (1998). Consumption self-control by rationing purchase quantities of virtue and vice. *Marketing Science*, *17(4),* 317-337.

Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *Journal of Marketing, 74(2),* 133-148.

Appendix 1: Stimuli reviews per book (Study 1)

Connie Palmen – Lucifer (fiction)

- Did Lucas kill his wife? I still think it's dangerous and Connie is playing with fire when she starts her book with a reference to Peter Schat. The book is really exciting and oh so clear from the hand of Connie Palmen. But suspecting someone of murder is balancing on a tightrope, but not healthy authorship anymore. I think a step less would have been the safer and better solution, without compromising the story.

- Every sentence of this story just makes you pause for a moment and think. Do you want more than just another story, but a book that really touches you? Then this one is highly recommended. The story of Lucas and Clara brings up so many different elements that merge perfectly. And the parts about Luca's compositions almost made me hear real sounds. I will definitely read through this book again in the future. A must have.

- Connie Palmen has a good reputation and maybe my expectations were too high, but this is not what I expected. Is this book a thriller, a novel, a philosophical book or something completely different? I can't get a grasp on it and that was the feeling I had constantly as a reader of this book: you constantly skip through different elements that the author tried to integrate. Cobbler, stick to thy last and let thrillers for people who know what they are doing.

- This story gets you from the first sentence and the rest of the story remains just as interesting. Such a strong opening and a book to remember that starts where others often stop. Truly an absolute masterpiece, written with class that drags you into the story of two lovers.

- Exciting. A wonderful novel, which makes you sit on the edge of your seat from the beginning to the end, without being horror. She tries to blend in three storylines about Lucas and Clara and succeeds completely. Impressive! Congratulations for yet another blockbuster from Connie Palmen. A must read!

J.K. Rowling – Harry Potter (fiction)

- I love love love Harry Potter. I read this book from the beginning to the end in one session. When Harry and Voldemort meet again and it comes to a confrontation I was sitting on the edge of my seat. You can read this book over and over again. Rowling finally closes it; all the questions and secrets are revealed and answered and real fans experience an absolute peak. Buy this book, read it, re-read it and yes, re-read it again. This is a keeper.

- Both my children and I read these books with pleasure. It fits for all ages and every sentence is more exciting than the last one. The stories are already a phenomenon in itself, but there is also a lot of attention for the cover and the issue. If you have not read the other books, dot that first and close Harry's story with this last, really special book. Exciting, moving and really, really, really for everyone.

- It was like reading part 6. Did Rowling want to get the most out of it by splitting her last book into two parts and prolong the hype for one more year? I, at least, was coming home from a bare trip, while I had expected so much more. I read the other Harry Potter books in one

session, but this felt like a repetition or continuation. If you already read all the Harry Potter stories you should also read this one, but please do not buy this book. It is a disappointment in the series.

- I already can't wait for the movie. The book is already very promising and in my eyes even stronger than the last one. You will finish with a very satisfied feeling, because all the questions and mysteries are finally gone. It meets all the expectations and places the entire Harry Potter hype in its place. Rowling couldn't have written a better ending and in my opinion this will be the ideal ending for many fans.

- Harry Potter part 7 = Harry Potter part 6 part 2. This book is not worthy to get a new title, because it is just a part of the previous book. As a big Harry Potter fan I was first in the store to get the new book and the promise of a spectacular final book made me return from a cold trip. Since Harry can also do his magic outside of Hogwarts, nothing is too crazy. It is still nice to read, if only because you have read the last 6 books. But I hope the movie will be better than the book.

John Freeman – Photography (non-fiction)

- What a beautiful book. I was a real dummy with my new digital camera and had no idea what I was doing. I have never gone beyond the disposable camera and never heard about light compositions. This book gives you both technical and aesthetic tips that make it much easier to make the pictures that you always wanted to make.

- Not enough illustrations. If someone explains to me how I should take a picture and to what I should pay attention, I expect at least that there is an example that I can use. I also expected

more of a step-by-step approach and not immediately a professional level. In sum, this book looks great from the outside but does not deliver in terms of practicality.

- How many people are in possession of an expensive digital camera but know only a fraction of what these things can do? Save yourself from this embarrassing situation, spend a little more money and buy this book. This is not a lesson, you don't have to study anything, but in a very smooth way you learn how to really use your camera. This is a very good book with incredible knowledge, which is explained very well.

- What can I say about this book? This is another book you buy very enthousiastly, but that eventually will just end up in the closet among the others. Read the manual of your camera and if you want to go further than the casual vacation shots, follow a fun workshop. But trust me, this book is not going to make you the photographer you hoped for. You learn how to make holiday pictures, but can't you do that already?

- It's a good book. What else can I say? It's just really really good and does exactly what it promises. It helps you to take better pictures. Not faint smudges or cut off faces, but the beautiful horizons you find in travel books and the smiling faces you want to remember. Even when you are already a step further, this book still provides many useful tips and knowledge. This is a topper.

Keir Radnedge – 50 years of European football (non-fiction)

- I was especially wondering what they call 'football legends'. Ok, every supporter has its own taste, but given the limited number of people they interviewed, they could at least make sure to cover different leagues and not be so one-sided. They want to maintain the balance between

the different generations, but I think they should also look further and bring in quality as a factor. This book is not my first choice.

- As an old football fan with lots of passion for this sport it was incredibly fun to see these old pictures and to remember that one great goal. This book gives you so much, both visually and for the data and especially the positive feeling. Football fans should have this at home and, by preference, in their memory.

- Athletes nowadays often write down their story, but it's more about their private life than about sport. That's why I was so pleased with this book that solely deals with the highlights of European football. The sport is shown at its best and sometimes you can just recall that one match. This book shows everything that every fan of the sport wants to know and to remember.

- I just don't get the point of this book. Personally, I expected more stories, interviews and a bit of glamor instead of just statistical data. Everything you can find in this book, you can perfectly find on the Internet (probably even on one site), but the book just lacks the depth that could have been there. Shame about the very nice pictures, who say only little without the actual story.

- Who scored that beautiful goal again? And who was the goalkeeper? What was the end score? All the question you sometimes have, that may have faded in your memory, come back alive and nothing remains unanswered. All of European football over the last 50 years is discussed here and is brought so beautifully that this book will be brought up many times.

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CHAPTER III:

WHEN BEING CONSISTENT MATTERS

THE EFFECT OF VALENCE CONSISTENCY ON REVIEW HELPFULNESS

When evaluating the helpfulness of online reviews, review valence (positive vs. negative reviews) is a particularly relevant factor. This research argues that the influence of review valence is highly dependent on its consistency with the valence of other available reviews. Using both real life and experimental data, the authors show that consistent reviews are perceived as more helpful than inconsistent reviews, independent of them being positive or negative. Experiments show that this valence consistency effect is driven by causal attributions, such that consistent reviews are more likely to be attributed to external factors that are more informative of the actual product quality, while inconsistent reviews are more likely to be attributed to internal factors of the reviewer. Supporting the attribution theory framework, reviewer expertise moderates the valence consistency effect by impacting consumers' causal attributions.

CHAPTER III: WHEN CONSISTENCY MATTERS: THE EFFECT OF VALENCE CONSISTENCY ON REVIEW HELPFULNESS

O nline reviews have become one of the most popular information sources for consumers (e.g., Chevalier & Mayzlin, 2006; Steffes & Burgee, 2009). The use of reviews is particularly relevant in situations of choice uncertainty (Hu, Liu, & Zhang, 2008). However, the abundance online reviews might cause another uncertainty issue. To help consumers with this information search problem, websites such as Amazon.com or Barnes & Nobles present the most helpful online reviews upfront, so consumers can easily identify them during their information search. What, however, makes a review helpful?

Existing literature on online reviews has identified numerous factors that affect how helpful consumers perceive an online review to be, including review and consumer characteristics, as well as the characteristics of the reviewed product (e.g., Doh & Hwang, 2009; Mudambi & Schuff, 2010). One factor that is particularly relevant is the valence of the review (positive vs. negative). While negative information is often seen as more impactful (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Rozin & Royzman, 2001), research on online reviews often argued that positive reviews are more helpful (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang, Craciun, & Shin, 2010). However, existing research has mostly ignored the fact that reviews are often consulted together with other reviews (see Purnawirawan, De Pelsmacker, & Dens, 2012 for an exception). The goal of the current research is to investigate if the helpfulness of a review is determined by its consistency with the valence of other available reviews. Using data from Amazon.com and from two experiments, we examine (1) how the consistency of reviews with other reviews determines their helpfulness, (2) the psychological processes

underlying this consistency effect, and 3) identify a boundary condition that further supports the proposed process.

This article makes several contributions. First, we contribute to research on review helpfulness. Existing research focused almost exclusively on the impact of review valence, without taking context factors into account. We demonstrate how the valence of other available reviews affects the helpfulness of an online review, introducing a valence consistency effect. Second, we propose an attribution theory explanation for this valence consistency effect. We propose that inconsistent reviews will be attributed to personal feelings of the reviewer, while consistent reviews will be attributed to the product's quality. This theoretical framework implies that the valence consistency effect is presumably weaker when reviews are provied by expert reviewers (i.e., expert reviews), whose information is more likely to be attributed to product-related factors in general.

Finally, because of the high relevance of online reviews for many purchase decisions, this research has important managerial contributions. Managers are often concerned about the impact of negative reviews. The current research provides further insights into the helpfulness of positive and negative reviews and offers possibilities for improved website utility and other actions to condition a review's perceived utility.

THE HELPFULNESS OF ONLINE REVIEWS

Word of mouth (WOM), or the communication between consumers, is a popular source of product information for consumers with a potentially strong impact on their attitudes (e.g., Brown & Reingen, 1987; Herr, Kardes, & Kim, 1991). One tremendously popular source of

WOM is online reviews, written by consumers on the Internet (Sher & Lee, 2009; Hu, Liu, & Zhang, 2008). Online reviews can significantly affect both online and offline purchase decisions (see Zhu & Zhang, 2010 for an overview). However, providing online reviews might not be enough. To have an impact on consumers' decisions, a review presumably needs to be seen as helpful first (Zhu & Zhang, 2010).

In previous studies, the helpfulness of online reviews has been attributed to a myriad of factors, including both review and consumer specific characteristics. As such, the review argumentation, the product type, the credibility of the reviewer itself and consumers' internet experience all have been found to influence consumers' reliance on online reviews (Cheung, Lee, & Rabjohn, 2008; Doh & Hwang, 2009; Forman, Ghose, & Wiesenfeld, 2008; Hu, Liu, & Zhang, 2008; Li & Zhan, 2011; Mudambi & Schuff, 2010; Sen & Lerman, 2007; Willemsen, Neijens, Bronner, & de Ridder, 2011; Zhu & Zhang, 2010). Another factor that receives considerable attention in the literature is the valence of a review (positive vs. negative).

Past research often argued that negative information has more impact on consumers. Negative information is more consequential than positive information (Baumeister et al., 2001; Rozin & Royzman, 2001) and often less common than positive information (Fiske, 1980; Peeters & Czapinski, 1990). In contrast, research on the helpfulness of online reviews has often suggested a so-called positivity bias by demonstrating that positive reviews are perceived as more helpful (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang et al., 2010; see Chen & Lurie, 2013 for an exception). However, this research has almost solely focused on the helpfulness of single online reviews, ignoring that consumers often face multiple reviews at the same time.

The current paper contributes to the existing research by investigating how an often ignored construct, the consistency of a review with other available reviews, affects the

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helpfulness of online reviews. In the current research we will show that valence consistency drives review helpfulness through the causal attributions consumer make about the review and/or reviewer (Folkes, 1988; Kelley, 1967; Sen & Lerman, 2007). Further, we show that this effect can be attenuated by contextual factors (i.e., communicated reviewer expertise).

THE REVIEW VALENCE CONSISTENCY EFFECT

Websites that offer online reviews, such as Amazon or Yelp, often present an array of reviews simultaneously. Hence, for most products consumers are likely to find a mix of both positive and negative reviews online (Purnawirawan et al., 2012). In the current paper, we propose a review valence consistency effect. We argue that when consumers consult information from multiple reviews, they will determine the value of an individual review relative to that of others. Therefore, the consistency of a review's valence with the valence of other available review will determine its helpfulness.

Past studies on review helpfulness have largely ignored the role of multiple reviews. While some papers studied the impact of a set of mixed positive and negative reviews (Chiou & Cheng, 2003; Doh & Hwang, 2009; Lee, Park, & Han, 2008), they have not investigated the perceived helpfulness of the reviews. More recently, Purnawirawan et al. (2012) have focused on a review set's helpfulness, showing that a positive or negative set of reviews is perceived as more helpful than a set containing both positive and negative reviews. In contrast to existing research, we are interested in the effect on the perceived helpfulness of an individual review when presented together with other reviews. Moreover, we are interested in the process underlying a potential valence consistency effect.

The effect of review valence consistency can operate in one of two directions. First, a review that is inconsistent with other available reviews might be perceived as more helpful than a review that is consistent with other reviews. For example, when most reviews of a product are positive, a negative review can offer something new and might therefore be perceived as more informative (Skowronski & Carlston, 1987). The inconsistency might give this review additional diagnostic power, which is translated into review helpfulness (Jiang & Benbasat, 2007; Mudambi & Schuff, 2010). Alternatively, attributional processes may cause a review that is inconsistent with most of the other available reviews to be perceived as less helpful than a consistent review.

AN ATTRIBUTION THEORY EXPLANATION

Attribution theory offers an understanding of the inferences people make about the validity of the opinions expressed in a review (Folkes, 1988; Mizerski, 1982). Essentially, reviews can be either attributed to the product experience (external attributions) or reviewer-specific motivations (internal attributions; Monga & John, 2008; Sen & Lerman, 2007).

Consumers' causal attributions might influence the perceived helpfulness of online reviews. The more information is attributed to a product's factual performance or actions, the more a consumer will be influenced by that information (Mizerski, 1982). Concretely, when consumers think that a review is based on external or product-related motivations, they will evaluate the review as legitimate, believable and, hence, as helpful. When consumers attribute the review to internal or reviewer-related reasons, in contrast, the review will be perceived as less helpful (Sen & Lerman, 2007).

Previous research has shown that negative reviews are more helpful for utilitarian

products than for hedonic products, because reviews for utilitarian products were more readily attributed to product-related factors (Sen & Lerman, 2007). Other research has argued that positive reviews are more attributed to the reviewer (vs. the product) than negative reviews and that indicating that a review was written shortly after a product experience (i.e., including temporal contiguity cues) reduces internal attributions for positive reviews (Chen & Lurie, 2013).

A person is more likely to attribute a review to product-related factors, when the review is associated with one particular product, when the product experiences are stable across time and situations and when others agree with the reviewer (Fiske & Taylor, 1991; Kelley, 1973). A set of reviews conveys information about the consensus between reviewers about the consumption experience and, hence, the consistency between the reviews (Laczniak, DeCarlo, & Ramaswami, 2001). Consequently, we argue that in a case of high consistency between a review's valence and the valence of other presented reviews, a review is more likely to be attributed to the actual product experience (external attributions), while inconsistent reviews will more likely be attributed to the personal attitudes and motivations of the reviewer (internal attributions). Since external factors are more reflective of a product's actual quality, the review will be perceived as more informative and, hence, as more helpful. Therefore, we hypothesize:

H1: Valence consistency affects review helpfulness. When a review's valence is consistent (vs. inconsistent) with the valence of other available reviews, the review will be perceived as more (vs. less) helpful.

H2: Causal attributions mediate the effect of valence consistency on review helpfulness. Stronger valence consistency causes more external and less internal attributions, which increases review helpfulness.

We further test the attribution theory explanation by examining how reviewer expertise moderates the valence consistency effect. Reviewer expertise is an interesting boundary condition for the effect of online reviews and previous research has illustrated its effect on the perceived value of WOM information (Schlosser, 2011; Willemsen et al., 2011). We argue that reviewer expertise has the potential to attenuate the impact of a review's valence consistency on the perceived review helpfulness. Therefore, examining the role of reviewer expertise provides further evidence for the underlying process.

Reviews are often evaluated as more informative and useful when the reviewer is perceived more credible (Willemsen et al., 2011) and, hence, willing and able to convey the truth (Eagly & Chaiken, 1993; Schlosser, 2011; Wood & Eagly, 1981). One way to do so is to look for expert cues of the reviewer. When the reviewer is indicated as an expert, the provided information will be perceived as more trustworthy and useful, and will have a stronger influence on the brand attitudes, purchase intentions and purchase behaviors (Willemsen et al., 2011). Consequently, we expect that the valence consistency effect is attenuated for reviews provided by experts. People use expertise cues to evaluate the credibility of review information (Eastin, 2001). While regular reviews are attributed to reviewer-related causes when inconsistent, this might not be the case for expert reviews. The content of an expert review is more likely to be attributed to product-related causes and should be less attributed to internal causes. Because of the higher expertise of the reviewer, the information might be seen as reflecting the product quality, even when disagreeing with other available reviews. Thus the valence consistency effect should be weaker for reviews written by an expert.

H3: Communicated reviewer expertise moderates the extent to which valence

consistency affects review helpfulness. Expert reviews will be more attributed to

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external factors than to internal factors, even when the review is inconsistent with other reviews.

OVERVIEW OF STUDIES

Three studies test our theoretical framework. In study 1, we use real life data from Amazon.com to provide evidence for the existence of the proposed consistency effect. Next, we conduct an experiment to illustrate the process underlying the effect (study 2). We show how consistent reviews are more likely to be attributed to product-related factors, while inconsistent reviews are attributed to non-product-related factors, which in turn drives the difference in helpfulness. Study 3 further investigates the underlying mechanism by looking at the moderating role of reviewer expertise. We show that people make less internal attributions for reviews written by experts, which attenuates the consistency effect.

STUDY 1: THE VALENCE CONSISTENCY EFFECT ON AMAZON

The aim of study 1 was to investigate the effect of review valence on the perceived helpfulness of online reviews using real life online review data. In particular, we are interested if the effect of review valence on review helpfulness is dependent on the valence of other presented reviews. This was tested with book review data derived from the public website of Amazon.com. We chose this data source, because Amazon.com is one of the largest online retailers with one of the most active reviewing communities online. Moreover, their bidirectional WOM network not only allows consumers to provide and read reviews, but also to judge the usefulness of the

review message. The proportion of helpfulness votes a review receives then serves as an indicator for the quality of the review (Chevalier & Mayzlin, 2006). Also, reviews are presented in groups, with multiple reviews available on the same screen.

Method

Review data about 1,300 online reviews for 117 different books were extracted from Amazon.com. We registered data for a maximum of 20 random reviews for each product in our sample (with a maximum of 20 reviews per product). To ensure that both relatively popular and unpopular books are taken into account, we included products from different sales ranks, with group of products ranked 1st to 25th, 101st to 125th, 501st to 525th, 5,001st to 5,025th and 10,001st to 10,025th. For each review, we extracted the review valence and the average score of the product (both ranging from 1 star for a very negative review to 5 stars for a very positive review), the review length (i.e., the number of words) and the sales rank of the books. Finally, we controlled for the confounding effect of the review position. The review position is the position on the list of reviews that were on the screen at the time of data collection. To avoid spurious relationships between the dependent and the independent variables caused by review position, we studied the relationship between the different constructs. Since no substantial correlations were found (all correlations were below an absolute value of .25), review position does not appear to be a confounding variable.

The goal of this research was to investigate the effect of review valence consistency on the perceived review helpfulness. Therefore, the dependent variable in our model is the proportion of readers that found a review to be helpful. This variable was operationalized by

dividing the number of people who evaluated the review as helpful by the total votes in response to the "was this review helpful to you" question on Amazon.com. The main independent variables of interest were the *review valence* and the *average score* of the product as a proxy for the score of other available reviews (both on a scale of 1 to 5; with 5 being a very positive evaluation). We used this proxy, since the composition of the displayed reviews is often changing. Therefore, it is uncertain which reviews were displayed when consumers evaluated the reviews' helpfulness. The average online customer review in our data set is positive ($M = 4.21$, $SD = 1.23$), as is the average product score ($M = 4.12$, $SD = .60$). This is consistent with what has been found in previous research (e.g., Chevalier & Mayzlin, 2006).

The review length and the sales rank were included as control variables. *Review length* was operationalized as the number of words a review contains. *Sales rank*, measured at the moment of data collection, ranges from 1 for the top-sold product to 10,025.

We analyzed the data using a regression model, with the perceived helpfulness as dependent variable and the review valence, average product score, the word count and the sales rank as independent variables. Since we included multiple reviews for each book, reviews are nested within books and we used a multilevel regression analysis. The interpretation of the parameter estimates is the same as with ordinary linear regression; merely the standard errors of the parameters are adjusted to obtain correct test statistics (Snijders & Bosker, 1999). The error degrees of freedom of the statistical tests were estimated using Satterthwaite's approximation, which may result in fractional degrees of freedom (Littell, Stroup, & Freund, 2002). As illustrated in Table 1, the regression model also included interactions with the control variables review length and sales rank, resulting in two three way interactions (*review valence x average*

product score x review length and *review valence x average product score x sales rank*). [1] To facilitate the interpretation of the interactions, we standardize the average product score, the review length and the sales rank. The regression coefficients associated with the attributes indicate the increase in attractiveness associated with a 1 SD increase on the attribute, conditional on the other attributes having an average level.

Results

The data shows that on average 67.09 % of the voters found the review to be helpful, which is consistent with former research (e.g., Chevalier & Mayzlin, 2006; Mudambi & Schuff, 2010). On average, consumers evaluate an online review as more helpful when the review is more positive (as indicated by the main effect of review valence). In addition, a significant two-way interaction between the review score and the average product score shows that the helpfulness of a review is also affected by the valence of other available reviews; supporting a valence consistency effect. To explore the interaction we conduct a simple slope analysis (see Figure 1). When the average score is high (1 SD above the mean; a score of 4.72) and, hence, most reviews are positive, positive reviews are seen as more helpful than negative reviews ($\beta = 13.57$, $t(1281.65) = 12.17$, $p < .001$). In contrast, when the average score is moderate (1SD

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[1] Multilevel regression analysis allows the analysis of repeated measures and nested data. In this study, review length and review valence vary within books, rather than merely across books. Multilevel regression requires the researcher to specify the appropriate error structure, guided by statistical criteria like Akaike's Information Criterion (AIC). In all our analysis, the most suitable error covariance structure was a compound symmetrical error structure (AIC = 12446.17 is smaller than for any other covariance structure), implying a constant correlation between any two errors. The presented model has the best fit (-2 Restricted Log Likelihood = 12442.17 is smaller than for other tested models).

below the mean; a score of 3.52), indicating a fair share of both positive and negative reviews, this effect disappears ($\beta = -.26$, $t(1282.34) = -.29$, $p = .78$). The valence of a review no longer has an effect on the perceived review helpfulness. Since the number of negatively evaluated products on Amazon is low, we are not able to look at the results for a negative context.

Table 1: Multilevel regression results for the prediction of review helpfulness (Study 1)

Parameter	Estimate	Standard Error	t-value	p-value
Intercept	36.61	3.66	10.01	$< .001$
Review valence	6.65	.77	8.68	$< .001$
Average score	-23.58	3.02	-7.80	$< .001$
Review valence x average score	6.91	.66	10.40	$< .001$
Control variables				
Review length	9.92	3.14	3.16	.002
Review length x review valence	-.60	.71	-.84	.40
Review length x average score	1.40	2.69	.52	.60
Review length x review valence x average score	-.05	.65	-.08	.94
Sales rank	4.05	4.15	.98	.33
Sales rank x review valence	.26	.89	.29	.77
Sales rank x average score	6.92	4.35	1.59	.11
Sales rank x review valence x average score	-1.96	.94	-2.08	.037

Review length does not affect the valence consistency effect. While on average, a longer review is perceived as more helpful (as indicated by the main effect), we find no significant two-way interaction with review valence, the average product score an no significant three-way interaction with both the review valence and average score. In contrast, we find that the valence consistency effect is affected by the sales rank of the reviewed product. A significant three-way

interaction indicates that the valence consistency effect is stronger for better-selling books. When the sales rank is relatively low (1 SD below the mean, indicating a better selling product), the interaction between review valence and average score is stronger ($\beta = 8.87$, $t(1284.09) = 8.53$, $p < .001$) than when the sales rank is relatively high (1 SD above the mean; $\beta = 4.95$, $t(1286.53) = 3.94$, $p < .001$). In either case, however, the valence consistency effect prevails.

Figure 1: Effect of reviewer score and average product score on perceived review helpfulness (Study 1)
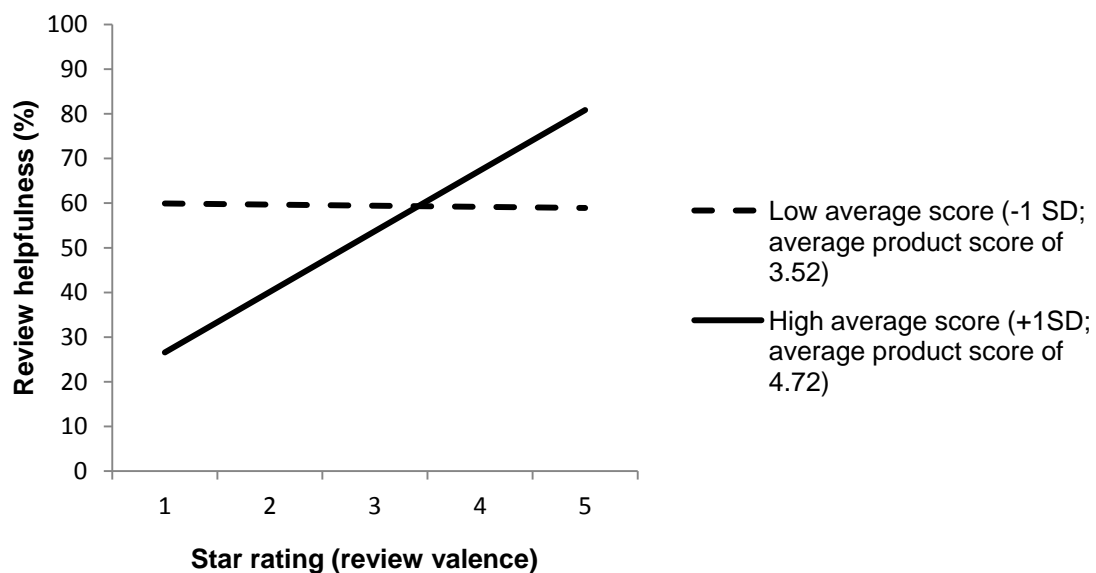
Discussion

The results of study 1 provide initial evidence in favor of the valence consistency effect (hypothesis 1). The Amazon data reveals that the average product score, as a proxy of the valence of other available online reviews influences the relationship between the valence of the focal review and the perceived review helpfulness. As such, a positive review for an on average positively evaluated product will be perceived as more helpful than a negative review would be

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in this context. This effect disappears when there is a fair share of negative reviews.

Drawing on 1,300 reviews from over 100 different products, the first study is interesting because of its external validity. There are, however, two limitations to the current study. First, since the average online customer review and the average product score are positive, we are unable to draw conclusions about situations where most of the available reviews are negative. Second, we used the average score as a proxy for the valence of other presented reviews. This however, is not an exact representation of the reviews the consumers actually looked at when evaluating the focal review. To address these issues we conducted two experiments to test the causality of the valence consistency effect, to examine the underlying mechanism and to investigate reviewer expertise as potential moderator.

STUDY 2: AN ATTRIBUTION THEORY EXPLANATION

With study 2 we aim to replicate the findings of the Amazon study with an experimental design and to test the proposed process underlying the effect of valence consistency on review helpfulness. As proposed in hypothesis 2, we expect that inconsistent reviews are attributed to internal factors (i.e., a reviewer's attitudes and motivations) and that consistent reviews are attributed to external factors (i.e., a product's performance). Since external factors are more informative about the actual quality of a product, consistent reviews should be perceived as more helpful.

Method

Hundred and sixty students (mean age = 20.32 years, SD = 3.04; 132 women) were

randomly assigned to the conditions of a 2 (review valence) x 3 (context valence) between-

subjects design. Respondents read a scenario, in which they had to decide if they want to visit an

Italian restaurant. They were then given a screenshot of a review website presenting four

different reviews: three filler reviews and one focal review. The stimulus reviews were written in

a way that every respondent received the same four reviews, in either positive or negative

versions. Negative reviews were created by replacing the positive adjectives in the positive

reviews with negative ones. The focal review had either a negative (one star review) or a positive

(five star review) valence. Context valence was manipulated with the valence of the filler

reviews. This resulted into a positive, neutral and negative context. For the positive context, the

filler reviews were either two positive and one negative reviews (when the focal review was

positive) or three positive reviews (when the focal review was negative). In the neutral context,

there were one positive and two negative conditions (for a positive focal review) or one negative

and two positive reviews (for a negative focal review). Finally, for the negative context, there

were three negative filler reviews (for a positive focal review) or two negative and one positive

reviews (for a negative focal review). An overview of the six conditions is presented in Table 2

(see Appendix 1 for an example of the stimuli).

Table 2: Composition of the review set in terms of context valence (Study 2)

Context	Focal review	Filler reviews
Positive context	Positive	2 positive; 1 negative
	Negative	3 positive
Neutral context	Positive	1 positive; 2 negative
	Negative	2 positive; 1 negative
Negative context	Positive	3 negative
	Negative	1 positive; 2 negative

After reading the reviews, we assessed participants' evaluation of the focal review's helpfulness. Review helpfulness was measured on a seven point-scale, with 1 being "not helpful at all" and 7 being "very helpful"[2]. After that, we assessed causal attributions using measures adapted from Laczniak et al. (2001). External (product-related) attributions were measured by asking participants how much they agree with five statements ("The restaurant is an inferior restaurant", "The restaurant is unpopular", The restaurant performed poor", The restaurant is unusual", and "The restaurant lacked the necessary qualities"; Cronbach's α = .85), and internal (reviewer-related) attributions were assessed with four statements ("He doesn't know enough about restaurants", "He does not appear to have the expertise to evaluate the restaurant properly", "He wanted to look smarter than he really is", and "He is the type of person who always says good/bad things"; Cronbach's α = .79). Participants were measured on a seven-point scale, with 1 being"do not agree at all" and 7 being "agree completely" with a neutral midpoint. For our analysis we focus on whether reviews are more attributed to external or internal causes.

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[2] Helpfulness in Study 2 and Study 3 was measured with a single-item measure. This single-item measure taps directly into how helpful respondents perceived the reviews. Moreover, previous research (e.g., Bergkvist & Rossiter, 2007) recommends the use of single-item measures when possible.

Therefore, we calculated a causal attribution score by subtracting internal from external attributions. A positive score indicates that the external attributions outweigh the internal attributions, while a negative score demonstrates greater internal (vs. lesser external) attributions.

Results

Review Helpfulness. Replicating and enhancing the results of study 1, the results indicate a significant two-way interaction between the valence of the focal review and the average valence of the context ($F(2,154) = 12.43$, $p < .001$; see Figure 2). Our results show that in a *neutral context* the positive review is evaluated as equally helpful as the negative review ($M_{\text{pos rev}} = 4.93$ vs. $M_{\text{neg rev}} = 5.00$, $F(1, 154) = .06$, $p = .81$). As in the previous study, when most reviews are positive (*positive context*), the results show that the positive review is evaluated as significantly more helpful than the negative review ($M_{\text{pos rev}} = 5.46$ vs. $M_{\text{neg rev}} = 4.09$, $F(1, 154) = 21.75$, $p < .001$). Interestingly, the effect is reversed in the *negative context*. When most reviews are negative, the negative review is evaluated as significantly more helpful than the positive review ($M_{\text{pos rev}} = 4.42$ vs. $M_{\text{neg rev}} = 5.12$, $F(1, 154) = 5.02$, $p = .027$).

Furthermore, the results show that the *positive review* is significantly more helpful in a positive context than in a negative context ($M_{\text{pos cont}} = 5.46$ vs. $M_{\text{neg cont}} = 4.42$, $F(1, 154) = 11.36$, $p < .001$) and marginally more helpful in a positive context than in a neutral context ($M_{\text{pos cont}} = 5.46$ vs. $M_{\text{neut cont}} = 4.93$, $F(1, 154) = 3.08$, $p = .081$) and marginally more helpful in a neutral context than in a negative context ($M_{\text{neut cont}} = 4.93$ vs. $M_{\text{neg cont}} = 4.42$, $F(1, 154) = 2.71$, $p = .10$). Providing further evidence for the valence consistency effect, we show that the *negative review* is more helpful in a negative context than in a positive context ($M_{\text{neg cont}} = 5.12$ vs. $M_{\text{pos cont}} =$

4.09, $F(1, 154) = 11.98$, $p < .001$). No significant difference, however, was found between the negative context and the neutral context ($M_{\text{neg cont}} = 5.12$ vs. $M_{\text{neut cont}} = 5.00$, $F(1, 154) = .14$, $p = .71$), while a significant difference was found between the neutral and the positive context ($M_{\text{neut cont}} = 5.00$ vs. $M_{\text{pos cont}} = 4.09$, $F(1, 154) = 9.13$, $p = .003$). Next to supporting the valence consistency hypothesis, these results also suggest a negativity bias. While the helpfulness of the positive review decreases as soon as there is a fair share of negative reviews (i.e., the neutral condition), the negative review is only perceived as less helpful when positive reviews are in the majority.

Figure 2: Effect of review valence and context valence on review helpfulness (Study 2)
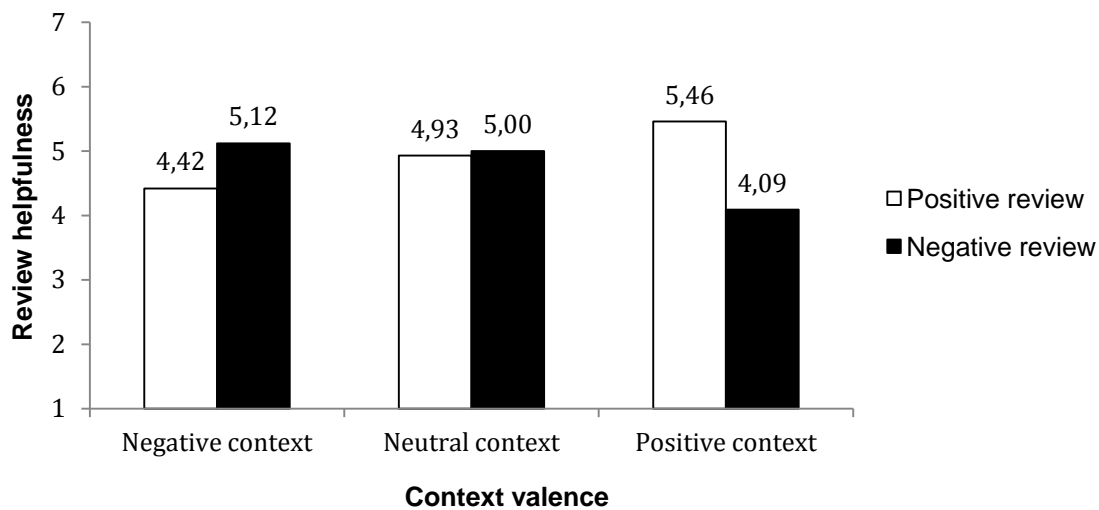
Causal Attributions. We again found a significant two-way interaction between the valence of the focal review and the average valence of the context ($F(2,154) = 42.70$, $p < .001$; see Figure 3). Our results show that the *positive review* is significantly more attributed to external causes when most other reviews were positive, while it is more attributed to internal causes when the context valence is negative ($M_{\text{pos cont}} = .88$ vs. $M_{\text{neg cont}} = -1.08$, $F(1, 154) =$

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29.84, $p < .001$). Moreover, we find a significant difference between the neutral and the negative condition ($M_{\text{neut cont}} = .29$ vs. $M_{\text{neg cont}} = -1.08$, $F(1, 154) = 14.91$, $p < .001$), but no significant difference between the positive and the neutral context valence ($M_{\text{pos cont}} = .88$ vs. $M_{\text{neut cont}} = .29$, $F(1, 154) = 2.73$, $p = .10$). Similarly, the *negative review* causes more external attributions in the negative context condition than when the context valence is positive ($M_{\text{neg cont}} = .50$ vs. $M_{\text{pos cont}} = -2.07$, $F(1, 154) = 55.23$, $p < .001$). Also, there is a significant difference between the neutral context and the positive context ($M_{\text{neut cont}} = .20$ vs. $M_{\text{pos cont}} = -2.07$, $F(1, 154) = 42.48$, $p < .001$), while no significant difference was found between the negative and neutral context ($M_{\text{neg cont}} = .50$ vs. $M_{\text{neut cont}} = .20$, $F(1, 154) = .61$, $p = .44$).

Figure 3: Effect of review valence and context valence on causal attributions (Study 2)
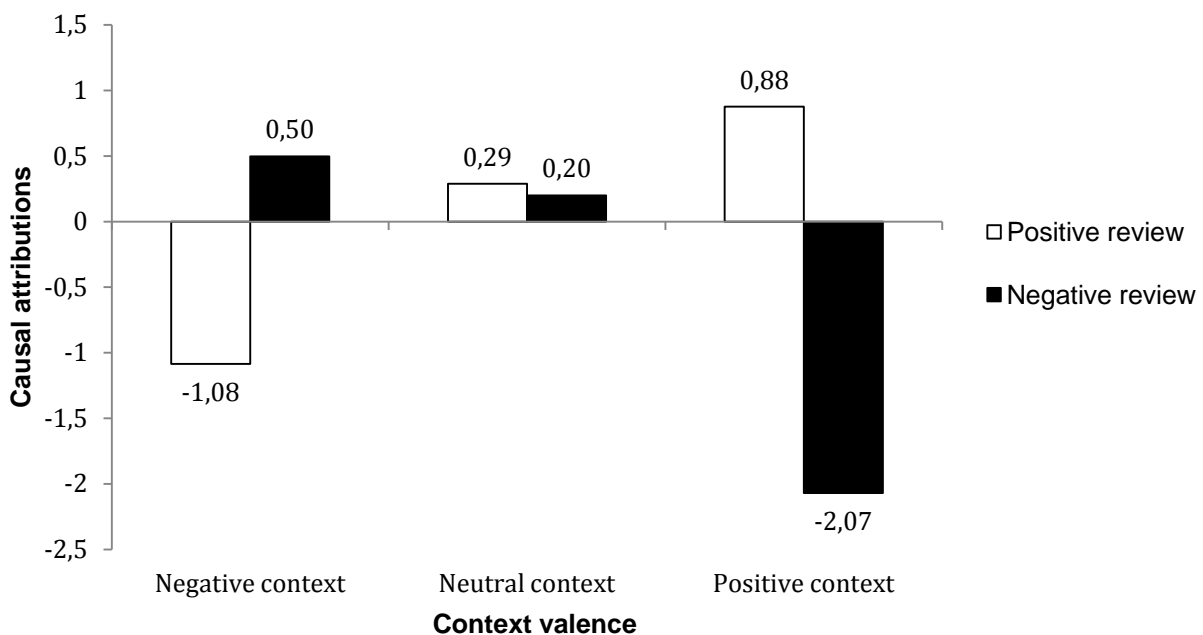
Mediation.   Supporting hypothesis 2, respondents' causal attributions explain the valence consistency effect (Figure 4). We calculated an indicator for valence consistency as the (standardized) absolute difference between the score of the focal review score and the average

score of the filler reviews. The results reveal that valence consistency has a significant positive impact on review helpfulness ($\beta = .34$, $t(156) = 2.64$, $p = .009$), which was unaffected by review valence ($\beta = .07$, $t(156) = .39$, $p = .70$). Similarly, a regression showed a positive relationship between valence consistency and the causal attributions ($\beta = .92$, $t(156) = 5.68$, $p < .001$), irrespective of the review valence ($\beta = -.14$, $t(156) = -.63$, $p = .532$). Causal attributions also significantly predict the perceived helpfulness of the focal review ($\beta = .43$, $t(158) = 9.50$, $p < .001$). In a simultaneous regression prediction the review helpfulness, the causal attributions continue to be a significant predictor ($\beta = .42$, $t(157) = 8.07$, $p < .001$), whereas review consistency is not any more ($\beta = .02$, $t(157) = .22$, $p = .83$). The bootstrap analysis for the indirect effect shows that this mediation is significant (95% CI [.25, .48]).

Figure 4: The mediating role of causal attributions (Study 2)
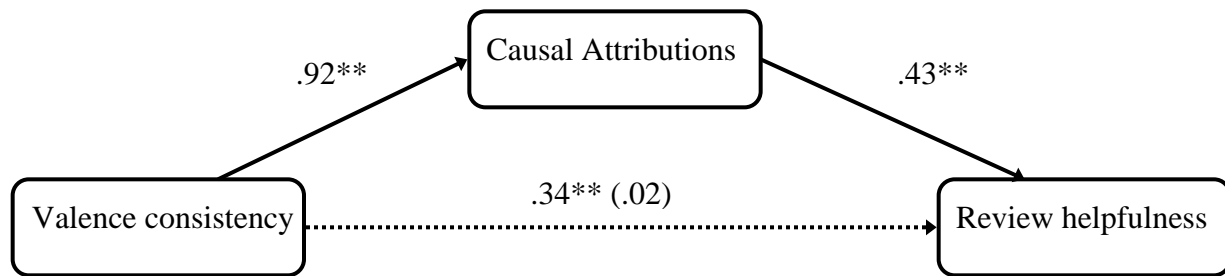
Notes: * $p < .05$; ** $p < .001$

Discussion

The results of study 2 replicate and extend the findings of our Amazon study (study 1). Consistent with previous findings, we show that a positive review is evaluated as more helpful in an overly positive context than in a negative context. Conversely, a negative review is evaluated

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as more helpful in a negative context than in a positive context. Moreover, we find evidence for hypothesis 2, by illustrating the process through which review valence consistency affects the helpfulness of online reviews. Specifically, we provide support for the attribution theory explanation. Participants attributed the review in a consistent context to the actual product performance (external attributions), while the reviews in an inconsistent context were attributed to factors of the reviewer (internal attributions). These causal attributions, in turn, had an effect on participants perceived review helpfulness.

STUDY 3: THE ROLE OF REVIEWER EXPERTISE

With study 3, we further test the attribution theory hypothesis by investigating the moderating role of reviewer expertise. Experts are often perceived as more credible and, hence, more objective (Hu, Liu, & Zhang, 2008). Consequently, expert reviews might be less likely to be attributed to internal factors and more to external factors, even when being inconsistent with other available reviews. Consistent with hypothesis 3, we expect that an inconsistent expert review might still be perceived as highly helpful, making the valence consistency effect disappear.

Method

Hundred and forty members of the marketing department's panel (mean age = 22.07 years, SD = 6.77; 93 women) participated in a 2 (review consistency) x 2 (reviewer expertise) between-subjects design. Participants were given a purchase decision scenario, about a new

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tablet computer. As in study 2, they were given a screenshot of a review website presenting four different reviews, consisting of three filler reviews and one focal review. Since no significant differences were found in the valence consistency effect for the positive and the negative reviews, we used only a positive (five star review) review as focal review. The review consistency was manipulated with the valence of the filler reviews. Consistent with the previous study, the filler reviews were either two positive filler reviews and one negative filler review (the consistent condition) or three negative filler reviews (the inconsistent condition). As in the previous study, all reviews were written in a way that every respondent received the same four reviews in either positive or negative versions. The negative filler reviews were created by replacing the positive adjectives in the positive reviews with negative ones. To manipulate the reviewer expertise, the focal review in the expert condition was indicated as 'expert review' and the reviewer identified himself as an IT-consultant (find an example of the used stimuli in Appendix 2).

As in Study 2, we assessed participants' perceived helpfulness of the focal review after they have read the reviews. Review helpfulness was measured on a seven point-scale, with 1 being "not helpful at all" and 7 being "very helpful". After that, we assessed the respondents' causal attributions (Laczniak et al., 2001), consisting of both external (product-related) attributions (Cronbach's α = .88) and internal (reviewer-related) attributions. (Cronbach's α = .80). As in study 2, we calculated a causal attribution score by subtracting internal from external attributions. Higher scores indicate greater external (vs. lesser internal) attributions.

Results

Review Helpfulness. As illustrated in Figure 5, the results indicate a significant two-way interaction between review consistency and reviewer expertise ($F(1,136) = 5.03$, $p = .026$). Particularly, for the *regular review* our findings illustrate a consistency effect, replicating the findings of study 2. The focal review is evaluated as less helpful in the inconsistent condition than in the consistent review. ($M_{cons} = 5.49$ vs. $M_{inc} = 4.37$, $F(1,71) = 13.50$, $p < .001$). For the *expert review,* however, there was no significant effect of valence consistency on review helpfulness. The perceived helpfulness is similarly high in the consistent and the inconsistent condition ($M_{cons} = 5.40$ vs. $M_{inc} = 5.19$, $F(1,65) = .67$, $p = .42$). Other contrasts illustrate that when inconsistent with other available reviews, the expert review is significantly more helpful than the regular review, ($M_{expert} = 5.19$ vs. $M_{regular} = 4.37$, $F(1, 136) = 8.22$, $p = .005$). In the consistent condition, both reviews are equally helpful ($M_{expert} = 5.40$ vs. $M_{regular} = 5.49$, $F(1, 136) = .09$, $p = .76$).

Figure 5: Effect of review consistency and reviewer expertise on review helpfulness (Study 3)
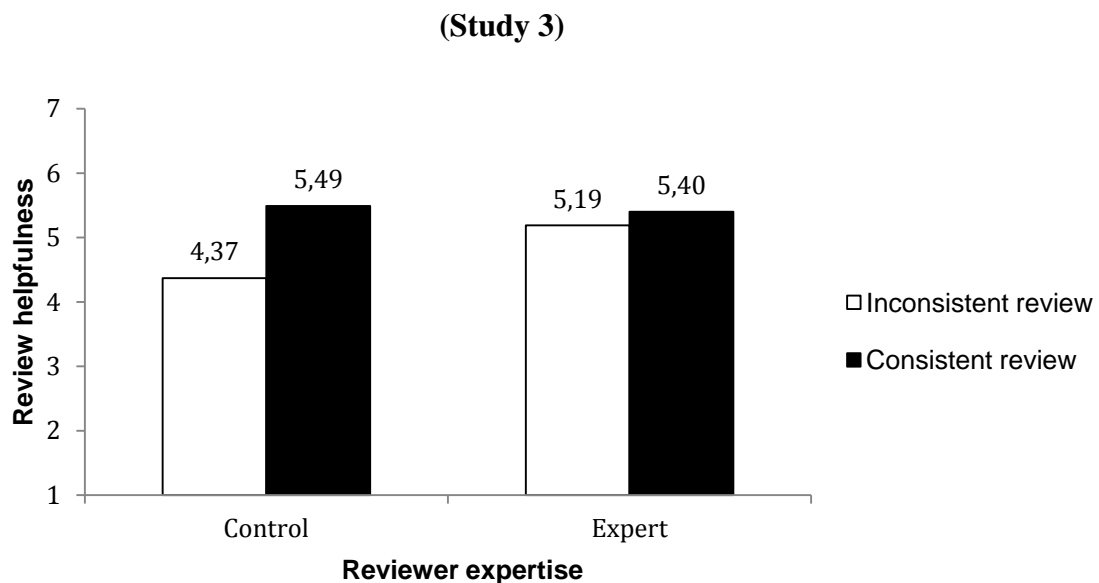
The Role of Causal Attributions. We test the underlying process of causal attributions. Consistent with study 2, valence consistency of the *regular review* increases the causal attributions score, as external attributions increase and internal attributions decrease ($M_{cons} = .93$ vs. $M_{inc} = -.84$, $F(1,71) = 23.69$, $p < .001$). Similarly, for the *expert review*, valence consistency also increases the causal attribution score ($M_{cons} = 1.24$ vs. $M_{inc} = -.13$, $F(1,65) = 17.64$, $p < .001$). Furthermore, we found that when consistent with other available reviews, there is no significant difference in causal attributions between the expert review and the regular review ($M_{expert} = 1.24$ vs. $M_{regular} = .93$, $F(1, 68) = .85$, $p = .36$). However, in the inconsistent condition, the causal attributions for the expert review are significant higher than the causal attributions for the regular review ($M_{expert} = -.13$ vs. $M_{regular} = -.84$, $F(1, 68) = 3.90$, $p = .052$). The results are illustrated in Figure 6.

To test if causal attributions mediate the valence consistency effect, we conducted a mediation analysis. In the control condition, valence consistency increased the causal attributions ($\beta = 1.77$, $t(71) = 4?87$, $p < .001$). Causal attributions, in turn, significantly predict the perceived helpfulness of the review ($\beta = .50$, $t(71) = 6.86$, $p < .001$). In a simultaneous regression prediction the review helpfulness of the regular review, the causal attributions continue to be a significant predictor ($\beta = .45$, $t(70) = 5.42$, $p < .001$), whereas review consistency is not ($\beta = .31$, $t(70) = 1.05$, $p = .30$). Conditional indirect effects indicate that, for regular reviews, causal attributions mediate the valence consistency effect (95% CI [.37, 1.17]). For expert reviews, we didn't observe a consistency effect to start with and no significant mediation occurs (95% CI [-.01, .72]).

Figure 6: Effect of review consistency and reviewer expertise on causal attributions

(Study 3)
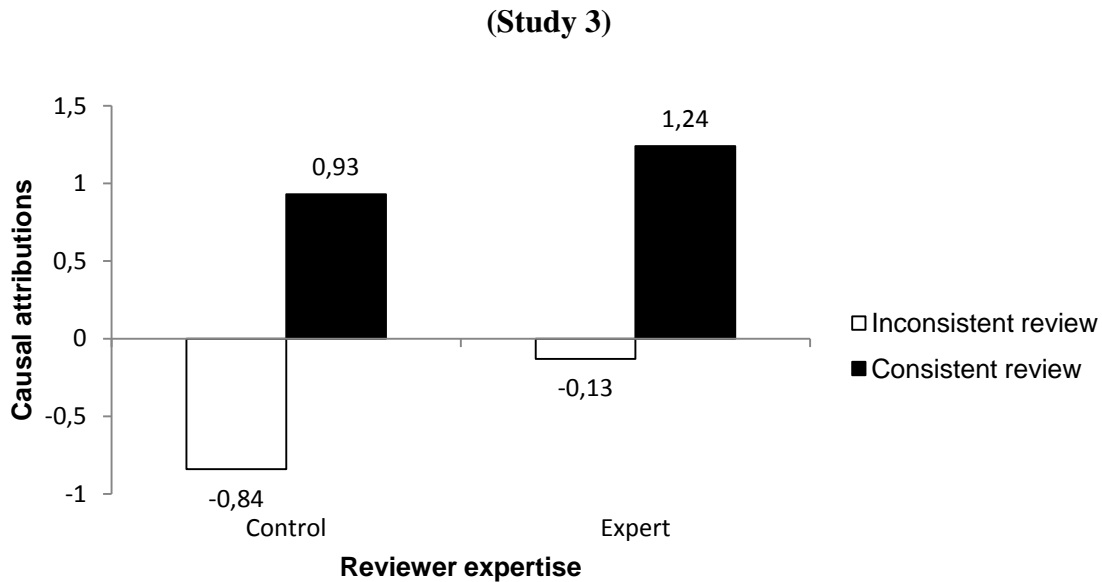
To understand why reviewer expertise moderates the valence consistency effect we take a closer look at the difference in helpfulness for the regular review versus the expert review in the inconsistent condition. As we discussed earlier, inconsistent *expert* reviews are still perceived as highly helpful, while the helpfulness of inconsistent *regular* reviews decreases significantly. Our results indicated that when the focal review is inconsistent causal attributions are significantly higher (i.e., more attributed to the product) for the expert review than for the regular review (M_{expert} = -.13 vs. $M_{regular}$ = -.84, $F(1, 68) = 3.90$, $p = .052$). This difference in causal attributions significantly affects review helpfulness ($\beta = .40$, $t(68) = 4.06$, $p < .001$). We test the mediating role of causal attributions. In a simultaneous regression predicting the review helpfulness, causal attributions continue to be a significant predictor ($\beta = .35$, $t(67) = 3.59$, $p = .001$), whereas reviewer expertise is only marginally significant ($\beta = .57$, $t(67) = 1.88$, $p = .065$). The difference in causal attributions explains the difference in helpfulness in the inconsistent condition (95% CI [.02, .71]). This mediation model is illustrated in Figure 7.

Figure 7: The mediating role of causal attributions for the effect of reviewer expertise on review helpfulness for inconsistent reviews (Study 3)
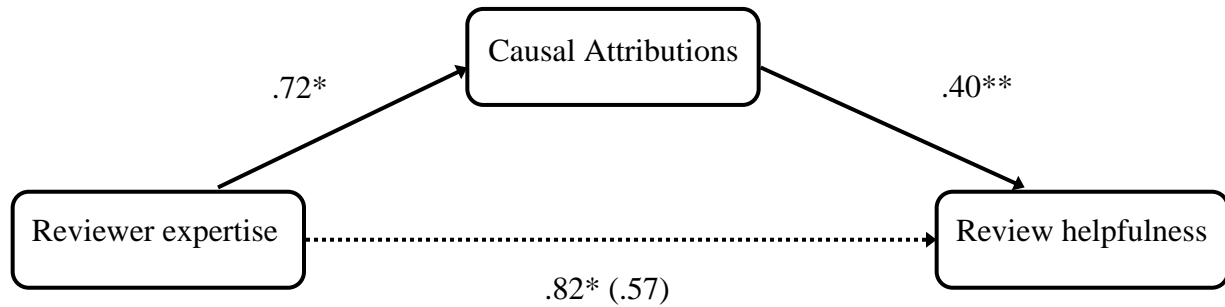
Notes: * $p < .05$; ** $p < .001$

Discussion

The results of study 3 provide further support for our theoretical framework. First, we replicate the findings of study 2 and show that people's causal attributions explain the effect of review valence consistency on review helpfulness. Second, we support our third hypothesis by showing that the effect of valence consistency on review helpfulness depends on the reviewer expertise. For regular reviews, inconsistency makes a review less helpful. Expert reviews, in contrast, are always evaluated highly helpful, regardless of valence consistency. Further analysis indicated that this is explained by the higher causal attributions for expert reviews when the focal review is inconsistent, indicating higher external attributions and lower internal attributions. This finding provides additional evidence for the attribution theory hypothesis. Affecting peoples' causal attributions has a direct effect on the perceived helpfulness of the review.

GENERAL DISCUSSION

The valence of a review is a particularly important factor for the perceived helpfulness of online reviews. However, previous research has often suggested a positivity bias, as positive reviews are often perceived as more helpful (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang et al., 2010). The goal of this research was to question the existing research. We investigated if the consistency of a review's valence with other available reviews, rather than a review's valence alone, will determine the perceived helpfulness.

Using both secondary data and experiments we show that not the valence of a review determines a review's helpfulness, but rather the consistency of a review's valence with other consulted reviews. In an analysis of reviews from Amazon.com (study 1), we show that positive reviews are on average more helpful, because the majority of Amazon reviews are positive. Taking the consistency with other reviews into account, however, shows that a review's valence is unrelated to helpfulness, when there is a fair share of negative reviews present (I.e., a neutral context). Additional studies (studies 2 and 3) replicated the consistency effect in experimental settings and extended the framework to negative reviews (study 2). Both positive and negative reviews are more helpful when their valence is consistent with that of other reviews.

Subsequent experiments also illustrate the underlying mechanism behind the valence consistency effect. Results support the attribution theory explanation (studies 2 and 3). When a review's valence is consistent with other available reviews, the review is more attributed to external causes and thus perceived to be reflective of a product's actual quality. Inconsistent reviews, in contrast, are attributed to internal, reviewer-specific factors, that are considered unrelated to product's quality and, hence, irrelevant for consumers' purchase decisions. These

causal attributions, in turn, affect the perceived review helpfulness.

Finally, the influence of valence consistency on review helpfulness is moderated by the reviewer's expertise (study 3). In particular, we show that the valence consistency effect disappears for reviews written by expert reviewers. Compared to an inconsistent regular review, an inconsistent expert review will cause more external and less internal attribution. Hence, the difference in causal attributions causes the review to be more helpful, even when inconsistent with other reviews. Because of its influence on causal attributions, this boundary condition serves as further evidence for the attribution theory explanation.

Theoretical and Practical Contributions

Online reviews have become a popular tool for both consumers and marketers. Our findings offer several contributions to the existing literature and practice. First, we contribute to the research stream investigating the role of WOM valence. Previous research has often illustrated a positivity bias (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang et al., 2010), suggesting that positive online reviews are perceived as more helpful. For this, research has almost exclusively looked at individual reviews only. In real life, however, consumers rarely consult online reviews in a vacuum and reviews are often presented in a set with multiple other reviews. Our research challenges the existing view and demonstrates that not the valence of the review, but its consistency with other available reviews affects its perceived helpfulness. We illustrate that both negative and positive reviews can be helpful to consumers, when presented with other reviews of the same valence.

Second, by combining valence consistency with the causal attribution theory, we provide

insight into the underlying reason of this effect. By offering an attribution theory explanation, our research deviates from previous research on valence effects. A positivity bias was suggested (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang et al., 2010), that posits that consumers have existing preferences for an option and positive information is valued more because it helps reducing the uncertainty of choosing this option. Negative information, in contrast, is discounted, since it increases uncertainty. Moreover, our results also deviate from a common explanation of the negativity bias (Skowronski & Carlston, 1987), which states that positive information should be valued less, because it is more common than negative information. Our results, however, illustrate, that positive information is valued more, when positive reviews are in the majority. However, our results show that negative information is to a certain degree stronger than positive information. Study 2 indicates that a negative focal review is only evaluated as less helpful when the majority of reviews are positive. A positive review, in contrast, is already less helpful in a neutral review set.

Furthermore, our results are consistent with the framework of Fiske and Taylor (1991) and Kelley (1967). A person's WOM will be more likely attributed to product-related factors, when consistent with other peoples' product experiences. Therefore the current research contributes to the emerging literature that combines attribution theory and online reviews (e.g., Chen & Lurie, 2013; Sen & Lerman, 2007). We suggest that the attributions consumers make about the causes of a review, whether it is the actual product experience or a reviewer's personal attitude, is crucial for their evaluation of the review. Hence, presenting consistent reviews might contribute to the helpfulness, and consequently, the influence of a review.

Finally, by establishing a boundary condition of reviewer expertise, we offer additional evidence for the attribution theory explanation. Moreover, this research contributes to the

emerging literature of online reviews and the role of expert reviews. Previous research has argued that reviews suggesting higher expertise (i.e., expert reviews) are seen as more useful and trustworthy (e.g., Willemsen et al., 2011). The current research argues that this is caused by the consumer's causal attributions. Moreover, this research implies that expert reviews are only more helpful than regular reviews, when they are inconsistent with other reviews. Consistent reviews are equally helpful, irrespective of the reviewer expertise.

In addition to its theoretical contributions, these findings also have important managerial implications. Online reviews are not only a popular decision aid for consumer, but are often used as a marketing tool (Dellarocas, 2003). The helpfulness of online reviews is an important indicator for managers, since higher helpfulness is related to higher customer acquisition and increased sales (Chevalier & Mayzlin, 2006; Clemons, Gao, & Hitt, 2006). However, while positive reviews have the potential to boost sales, negative reviews can hurt them. Consequently, the existence of negative reviews is often a main concern. While managers might not be able to control the reviews that are posted, they may have some influence on the way the reviews are presented. Our research suggests that it is important to manage the presentation of online reviews to maximialize the impact of positive reviews and to reduce the impact of negative reviews. Our results suggest that the helpfulness of a positive review might be strongly affected by the presence of negative reviews. In contrast, one might consider presenting negative reviews between positive reviews, in order to diminish the impact of the former. Our findings also stress the importance of expert reviews. Expert reviews are able to withstand the conflicting impact of inconsistent reviews on consumers' review evaluations.

Directions for Future Research

The current research offers a number of questions for future research. First, the order in which online reviews are presented might influence the valence consistency effect. The effect we fond, might differ when the reviews of the valence shared by the majority are presented first (i.e., a primacy effect; Deese & Kaufman, 1957; Haugtvedt & Wegener, 1994), when they are the last items the consumer sees (i.e., a recency effect; Cohen, 1981; Murdock, 1962) or when these reviews are presented at the start and end of the review set (Punawirawan et al., 2012). Alternatively, we might also observe trend effects. For example, an inconsistent positive restaurant review might be perceived as more helpful when consumers observe a positive trend over time, compared to when there is a negative trend (or no trend). In a positive (negative) trend, positive (negative) reviews might be attributed to product-related factors, even when inconsistent with the majority of the (older) reviews.

One of the limitations of the current research is that we didn't control for differences in the importance of the items discussed in the reviews and differences in the importance between the focal review and the filler reviews. While everything, but the review valence and the reviewer expertise, is held constant between the conditions, future research should pay attention to differences within the conditions.

Moreover, while we identified causal attributions as underlying mechanism and reviewer expertise as an interesting boundary condition, additional research should also further explore the mechanism and possible boundary conditions. Our rationale suggests that the valence consistency effect might be attenuated when consumers are induced to process the review analytically rather than holistically. The salient availability of other reviews may facilitate

holistic processing. When consulting available reviews, consumers are likely to focus on the overall set rather than on the content of an individual review. Hence, a review's consistency with other reviews becomes important. In contrast, when people would approach a review analytically and focus on the individual components of a particular review, they might judge the review on its inherent, content-related qualities and therefore the same review would not be attributed to internal causes when in an inconsistent context. Consequently the consistency with other reviews might be less or not important.

The impact of processing style also suggests the impact of a personality variable: peoples' regulatory focus. Previous research has shown that promotion-focused individuals approach information more holistically, looking at the broader picture. In contrast, prevention-focused individuals tend to process information in a more analytical fashion (e.g., Forster & Higgins, 2005; Zhu & Meyers-Levy, 2007). Hence, consumers' regulatory focus can influence the causal attributions they make when confronted with consistent or inconsistent reviews.

The valence consistency effect could also be moderated by consumers' preferences. Previous research has argued that having a strong preference can turn a negativity bias into a positivity bias. A preexisting preference might lead to the distortion of new information in favor of the preferred alternative (i.e., a confirmation bias; Russo, Medvec, & Meloy, 1996). Eventually, the discounting of negative information might occur even when negative reviews are in the majority, which would attenuate the valence consistency effect.

Finally, future research should look into consumers' actual information search and reading behavior, by employing a mouse lab or eye-tracking experiment. Moreover, additional research could investigate how restricting consumers to comparisons between some reviews affects the causal attributions they make.

Conclusion

In summary, the present research contributes to the existing literature of online reviews by illustrating the role of perceived consistency among consulted reviews. Review valence is an important factor for consumers' evaluation of online reviews. Existing research, however, has ignored that reviews are often approached when surrounded by other reviews. Drawing on attribution theory, our findings provide evidence that the consistence of a review's valence with that of other reviews is crucial for the impact of review valence on review helpfulness.

REFERENCES

Baumeister, F., Bratslavsky, E., Finkenauer, C.; & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology, 5(4),* 323-370.

Brown, J. J., & Reingen, P. H. (1987). Social ties and word-of-mouth referral behavior. *Journal of Consumer Research, 14(3)*, 350-362.

Carlson, K. & Guha, A. (2010). The ratings paradox: Why we prefer reading negative reviews, but then subsequently rate these reviews as less useful. *Advances in Consumer Research, 37.*

Chen, Z., & Lurie, N. H. (2013). Temporal contiguity and negativity bias in the impact of online word-of-mouth. *Journal of Marketing Research*, *50(4)*, 463-476.

Cheung, C. M., Lee, M. K., & Rabjohn, N. (2008). The impact of electronic word-of-mouth – the adoption of online opinions in online customer communities. *Internet Research*, *18(3),* 229-247.

Chevalier, J. A. and Mayzlin, D. (2006). The effect of word of mouth on sales: online book reviews. *Journal of Marketing Research, 43(3*), 345-354.

Chiou, J. S., & Cheng, C. (2003). Should a company have message boards on its web sites?. *Journal of Interactive Marketing*, *17(3),* 50-61.

Clemons, E. K., Gao, G. G., & Hitt, L. M. (2006). When online reviews meet hyper-differentiation: A study of the craft beer industry. *Journal of Management Information Systems, 23(2),* 149-171.

Cohen, R. L. (1981). On the generality of some memory laws. *Scandinavian Journal of Psychology, 22(1)*, 267-281.

Deese, J., & Kaufman, R. A. (1957). Serial effects in recall of unorganized and sequentially

organized verbal material. *Journal of Experimental Psychology*, *54(3),* 180-187.

Doh, S. J., & Hwang, J. S. (2009). How consumers evaluate ewom (electronic word-of-mouth) messages. *CyberPsychology & Behavior*, 12(2), 193-197.

Eastin, M. S. (2001). Credibility assessments of online health information: the effects of source expertise and knowledge of content. *Journal of Computer Mediated Communication*, *6(4)*, 0-0.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers, 1993.

Fiske, S. T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology*, *38(6),* 889-906.

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York, NY: McGraw-Hill.

Folkes, V. S. (1988). Recent attribution research in consumer behavior: A review and new directions. *Journal of Consumer Research*, *14(4)*, 13-23.

Forman, C., Ghose, A., & Wiesenfeld, B. (2008). Examining the relationship between reviews and sales: The role of reviewer identity disclosure in electronic markets. *Information Systems Research, 19(3),* 291-313.

Forster, J., & Higgins, E. T. (2005). How global versus local perception fits regulatory focus. Psychological Science*, 16(8),* 631-636.

Haugtvedt, C. P., & Wegener, D. T. (1994). Message order effects in persuasion: An attitude strength perspective. *Journal of Consumer Research*, *21(1)*, 205-218.

Herr, P. M., Kardes, F. R., & Kim, J. (1991). Effects of word-of mouth and product-attribute information on persuasion: an accessibility-diagnosticity perspective. *Journal of Consumer Research, 17(4)*, 454-462.

Hu, N., Liu, L., & Zhang, J. J. (2008). Do online reviews affect product sales? The role of

reviewer characteristics and temporal effects. *Information Technology and Management*,

9(3), 201-214.

Huang, Y. K., & Yang, W. I. (2008). Motives for and consequences of reading internet book

reviews. *The Electronic Library, 26(1),* 97-110.

Jiang, Z. J., & Benbasat, I. (2007). The effects of presentation formats and task complexity on

online consumers' product understanding. *MIS Quarterly*, *31(3),* 475-500.

Kelley, H. H. (1967). Attribution theory in social psychology. In *Nebraska symposium on

motivation*. University of Nebraska Press.

Kelley, H. H. (1973).The process of causal attribution. *American Psychologist, 28(2)*, 107-128.

Laczniak, R. N., DeCarlo, T. E., & Ramaswami, S. N. (2001). Consumers' responses to negative

word-of-mouth communication: An attribution theory perspective. *Journal of Consumer

Psychology, 11(1),* 57-73.

Lee, J., Park, D. H., & Han, I. (2008). The effect of negative online consumer reviews on product

attitude: An information processing view. *Electronic Commerce Research and Applications*,

7(3), 341-352.

Li, J., & Zhan, L. (2011). Online Persuasion: How the written word drives wom evidence from

consumer-generated product review. *Journal of Advertising Research, 51(1),* 239-257.

Littell, R. C., Stroup, W. W., & Freund, R. J. (2002). *SAS for linear models.* SAS Publishing,

Cary, NC.

Mizerski, R. W. (1982). An attribution explanation of the disproportionate influence of

unfavorable information. *Journal of Consumer Research 9(3)*, 301-310.

Monga, A. B., & John, D. R. (2008). When does negative brand publicity hurt? The moderating

influence of analytic versus holistic thinking. *Journal of Consumer Psychology*, *18(4),* 320-332.

Mudambi, S. M., & Schuff, D. (2010). What makes a helpful online review? A study of customer reviews on Amazon.com. *MIS Quarterly, 34(1),* 185-200.

Murdock Jr, B. B. (1962). The serial position effect of free recall. *Journal of Experimental Psychology, 64(5),* 482-488.

Pan, Y., & Zhang, J. Q. (2011). Born unequal: a study of the helpfulness of user-generated product reviews. *Journal of Retailing, 87(4),* 598-612.

Peeters, G., & Czapinski, J. (1990). Positive-negative asymmetry in evaluations: The distinction between affective and informational negativity effects. *European Review of Social Psychology*, *1(1),* 33-60.

Purnawirawan, N., De Pelsmacker, P., & Dens, N. (2012). Balance and sequence in online reviews: How perceived usefulness affects attitudes and intentions. *Journal of Interactive Marketing*, *26(4),* 244-255.

Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review, 5(4),* 296-320.

Russo, J. E., Meloy, M. G., & Medvec, V. H. (1998). Predecisional distortion of product information. *Journal of Marketing Research*, *35(4)*, 438-452.

Schlosser, A. E. (2011). Can including pros and cons increase the helpfulness and persuasiveness of online reviews? The interactive effects of ratings and arguments. *Journal of Consumer Psychology*, *21(3),* 226-239.

Sher, P. J., & Lee, S. H. (2009). Consumer skepticism and online reviews: An elaboration likelihood model perspective. *Social Behavior and Personality: An International Journal*,

37(1), 137-143.

Sen, S., & Lerman, D. (2007). Why are you telling me this? An examination into negative

consumer reviews on the web. *Journal of Interactive Marketing*, *21(4),* 76-94.

Skowronski, J. J., & Carlston, D. E. (1987). Social judgment and social memory: The role of cue

diagnosticity in negativity, positivity, and extremity biases. *Journal of Personality and*

Social Psychology, *52(4),* 689-699.

Snijders, Tom A. B. and Roel J. Bosker (1999). *Multilevel Analysis. An Introduction to Basic*

and Advanced Multilevel Modeling. Sage Publications: London.

Steffes, E. M., & Burgee, L. E. (2009). Social ties and online word of mouth. *Internet Research*,

19(1), 42-59.

Willemsen, L. M., Neijens, P. C., Bronner, F., & de Ridder, J. A. (2011). "Highly

recommended!" The content characteristics and perceived usefulness of online consumer

reviews. *Journal of Computer‐Mediated Communication*, *17(1),* 19-38.

Wood, W., & Eagly, A. H. (1980). Stages in the analysis of persuasive messages: The role of

causal attributions and message comprehension. *Journal of Personality and Social*

Psychology, 40(2), 246-59.

Zhang, J. Q., Craciun, G., & Shin, D. (2010). When does electronic word-of-mouth matter? A

study of consumer product reviews. *Journal of Business Research*, *63(12),* 1336-1341.

Zhu, R. J., & Meyers-Levy, J. (2007). Exploring the cognitive mechanism that underlies

regulatory focus effects. *Journal of Consumer Research, 34(1)*, 89-96.

Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role

of product and consumer characteristics. *Journal of Marketing, 74(2),* 133-148.

Appendix 1: Example of the stimuli (positive focal review in a positive context) with the third review as the focal review (Study 2)

⭐☆☆☆☆

Sarah Vermeulen, 25

I visited the restaurant together with friends and it was disappointing. It was very unsociable, the interior was ugly, the food wasn't good and the service was bad.

⭐⭐⭐⭐⭐

Tom Peeters, 24

I had recently come to eat here and was surprised how nice it was. The restaurant was very busy, but the service was very friendly. I had the lasagna, which was just delightful.

⭐⭐⭐⭐⭐

Pieter Janssens, 23

I had a fantastic experience. Good service, great food, large portions and an intimate and cozy atmosphere. What more can you ask for? The price was higher than I would normally spend, but it was totally worth it.

⭐⭐⭐⭐⭐

Elke Van Doren, 27

I really enjoyed the food. This is a good Italian option in this neighboorhood. The gnocchi was not the best, but everything else was very tasty. I would definitely recommend this place!

Appendix 2: Example of the stimuli (positive expert review in the consistent context) with the first review as the focal review (Study 3)

⭐⭐⭐⭐⭐

Christophe Janssens   **EXPERT REVIEW**

As an IT consultant, I used this tablet extensively in the last months. The tablet's size and weight is very handy. The battery is of good quality and is even more durable than the stated duration. The tablet is also very easy to use and has a fast reaction time. The screen displays a sharp image and is easy to operate. The tablet also features plenty of storage space, making it one of the best in its price range.

⭐⭐⭐⭐⭐

Sarah Vrancken

This is a good tablet. There are a lot of positive things to say about this product. The processor is very strong and the tablet has a lot of storage. Overall, this is a good tablet that really is worth the money. A good buy.

⭐⭐⭐⭐⭐

Thomas Peeters

After using this tablet for a few months, I am very pleased and excited about this product. I am more and more convinced that I made a great purchase. Especially the picture quality is great and the display makes it really easy to use. Overall, this is an excellent tablet that is worth the money and which you will enjoy for quite some time.

⭐☆☆☆☆

Tom Jorissen

I have this tablet for a couple of months now and I have to say that I am absolutely not satisfied with its performance. It is hard to use and the image is disappointing. I also think that the battery is very limited. Altogether, I wouldn't recommend this tablet.

CHAPTER IV:

EASY ON THE MIND

HOW SORTING OPTIONS ON DIFFERENT ATTRIBUTES INFLUENCES CONSUMER PRODUCT EVALUATIONS

Information about alternatives often appears in a multi-option multi-attribute table, with the alternatives hierarchically sorted on attribute levels. This research shows that the choice of the primary sorting attribute can affect consumers' evaluations. It illustrates that the attribute on which options are primarily sorted becomes more important in preference formation, but only if this attribute is hard to evaluate. This sorting effect disappears if attribute level evaluation is rendered easier. Eye-movement data further show that the time to evaluate a given attribute level, a proxy for evaluation effort, mediates the effect of choice of sorting attribute on attribute weight in option evaluation.

CHAPTER IV: EASY ON THE MIND: HOW SORTING OPTIONS ON DIFFERENT ATTRIBUTES INCLUENCES CONSUMER PRODUCT EVALUATION

W hen evaluating products, consumers often consult information about different attributes. This attribute information can be displayed in ordered sets, with each row corresponding to an alternative and each column corresponding to an attribute (Cai & Xu, 2008; Diehl, Kornish, & Lynch, 2003; Kleinmutz & Schkade, 1993). Especially on websites, this is a popular way of presenting different choice options. These multi-option multi-attribute tables provide a readily accessible summary of various choice alternatives that allow consumers to sort and compare alternatives for evaluation. Yet insufficient research has addressed their role in consumers' decision making. A more thorough understanding of this phenomenon has relevant implications for choice environments.

Prior research has demonstrated that ranking options according to quality renders consumers more price sensitive (Diehl et al., 2003), and that the weight of quality is higher when options are sorted on decreasing quality than when they are sorted according to increasing quality (Cai & Xu, 2008). However, the decision at hand often does not involve whether or not to sort options, but rather what attribute should be selected to sort the options on. Indeed, often a hierarchical sorting scheme is used in which all options are ranked on some attribute first, and in case of ties, on subsequent attributes. The aim of the present paper is to investigate how the choice of primary sorting attribute affects how consumers use the attribute information contained in the table. In particular, we examine why and when the choice of sorting attribute affects its weight in decision-making. Admittedly, research showing that the weight of an attribute in consumers' product judgments is increased by simply sorting options according to that attribute

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(Cai & Xu, 2008; Russo, 1977) already suggests that the choice of sorting attribute may not be inconsequential. However, this research has not documented the underlying mechanism. Consequently, it does not allow predicting when the choice of sorting attributes affects attribute weights, nor does it give any information on how general the sorting effect is.

The contribution of the present paper is threefold. First, while prior research has examined the impact of sorting (vs. not sorting), we investigate the impact of sorting on one attribute (rather than another one). Second, we advance an ease-of-evaluation account of the impact of choice of sorting attribute on attribute weight (sorting effect). This account proposes that 1) sorting renders attribute level evaluation for the sorting attribute easier, and 2) that consumers more readily use information they find easy to process (Russo et al., 1986; Simonson, Bettman, Kramer, & Payne, 2013). The advanced framework implies that not all attributes may equally benefit from being selected as sorting attribute. Specifically, it implies that the weight of an attribute only increases when selected as sorting attribute if people find it hard to evaluate its levels (Hsee & Zhang, 2010; Luce, Bettman, & Payne, 2000). So, while prior research has assumed that the effect of sorting is homogeneous across attributes, we show that attribute evaluability is an important moderator of that effect. Finally, in addition to testing this mechanism we use eye-movement data to advance our understanding of how consumers use the information that appears in multi-option multi-attribute tables.

THE EFFECT OF RANKINGS ON PRODUCT EVALUATIONS

When consumers evaluate different options, the way information is presented often plays an important role. Consumers often lack well-defined or preexisting ideas about how to evaluate

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products (Häubl & Murray, 2003). Therefore, preferences emerge when consumers receive some prompt to make a choice (Bettman & Kakkar, 1977; Bettman, Luce, & Payne, 1998; Jarvenpaa, 1990). This construction process reflects the interaction between characteristics of the decision maker and properties of the decision task (Payne, Bettman, & Schkade, 1999). Because various contexts highlight different aspects of the choice options, consumers' product evaluations might differ, depending on the context (Bettman et al., 1998). Constructed preferences have been shown to be sensitive to the presentation of the information (Lurie & Mason, 2007; Slovic, 1995).

One way to present alternatives and their attribute information is in a multi-option multi-attribute table. Such tables usually present a hierarchical sorting of alternatives in which the alternatives are sorted on some attribute and subsequently on other attributes. The choice of the primary sorting attribute may affect the role of the included attributes and, hence, affect the way in which consumers evaluate the alternatives (Dhar & Simonson, 1992; Diehl & Zauberman, 2005). For example, when camera options are sorted by quality, cameras that score higher on quality may be evaluated better than lower quality cameras. Conversely, better-priced cameras may be evaluated higher than more expensive cameras when they are sorted by price (Cai & Xu, 2008). Despite the potential impact of sorting options on consumers' decisions, we know little about *how* sorting influence product evaluations.

AN EASE-OF-EVALUATION EXPLANATION

We expect that the choice of sorting attribute in a ranking can affect consumers' product evaluations by influencing the extent to which consumers use the different attributes. Consumers

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evaluate products by looking at the available options' scores on different attributes. Evaluation often implies determining the relative position of a given attribute level in a relevant distribution of attribute's levels (Stewart, Chater, & Brown, 2006). To determine this relative position, consumers can rely on distributional information acquired through learning from previous experiences. If they have only limited knowledge of alternative relevant attribute levels though, they may try to construct a reference distribution using attribute-level information in the immediate context in which a decision is made (Stewart et al., 2006).

Sorting options on a given attribute makes evaluation of attribute levels easier. In fact, the rank of an option informs on the ordinal position of its level on the primary attribute. In best-to-worst rankings for example, it is clear that an attribute level in second place refers to the second-best attribute level. So, sorting options on a particular attribute facilitates the interpretation of the options' values on this attribute (Suk, Lee, & Lichtenstein, 2012). Attributes that are easier to evaluate are more likely to become more active in peoples' minds. In turn, higher accessibility may affect the degree to which the attribute will be used in consumers' evaluation (e.g., Higgins, 1996). Conversely, a less evaluable attribute might be less accessible and, hence, be less processed by the consumer. Consequently, the primary sorting attribute likely will be more used in consumers' decisions (Jarvenpaa, 1990; Kleinmuntz & Schkade, 1989; Slovic & MacPhillamy, 1974). In other words, the weight of an attribute in multi-attribute decision-making may increase when that attribute is selected as primary sorting attribute in a hierarchical sorting scheme.

Cai and Xu (2008) indeed found that sorting options on quality increases the weight of quality in consumer decisions. While they propose that a sorting effect emerges because it renders attribute level comparison easier, they have not tested that mechanism. In addition, they

have not hinted at any particular moderator of the sorting effect. We suggest, however, that the distinction between relatively more and less evaluable attributes (Hsee & Zhang, 2010) may refer to an important moderator of the sorting effect. Attributes are easily evaluable if the evaluator possesses an innate reference system for making attribute-level evaluations, or can draw on relevant past attribute-level information. In both cases, evaluations should be relatively effortless. Less evaluable attributes instead are those for which the evaluator has neither an innate reference system nor access to relevant past attribute-level information. Less evaluable attributes thus require that consumers compare attribute levels of the various available options to assess its position in a reference distribution.

Because the processing of less evaluable attributes depends critically on the comparison of currently available options, the sorting effect should particularly influence the use of hard-to-evaluate attributes, and consequently their weight. In contrast, for evaluable attributes consumers have access to relevant information that allows assigning a value to a given attribute level, without requiring comparisons of currently available attribute levels. Thus, whether the options are sorted on these attributes or not should not make it markedly easier or harder to process this information. Our model therefore predicts a stronger sorting effect for hard-to-evaluate attributes than for easy-to-evaluate ones.

The proposed ease-of-evaluation account is in line with various studies and theories suggesting that people are cognitive misers who, rather than thoroughly analyzing all the information presented, tend to focus on specific aspects of the information. For instance, the cost-benefit framework of judgment and decision-making (e.g., Johnson & Payne, 1985) implies that consumers typically focus on a trade-off between quality and effort in decision making, as to maximize accuracy and to minimize effort (Payne, 1982; Urbany, 1986). Our discussion leads to

the following hypotheses:

H1:   The choice of the primary sorting attribute affects consumers' evaluation. Sorting options on a particular attribute increases the weight of this attribute in consumers' judgments.

H2:   Attribute evaluability moderates the extent to which the choice of sorting attribute affects attribute weights. The weight of easily evaluable attributes will not be affected by the choice of sorting attribute.

H3:   Ease of evaluation mediates the sorting effect for hard-to-evaluate-attributes. Sorting options on this attribute makes the attribute levels easier to evaluate, which increases the weight of this attribute.

OVERVIEWS OF STUDIES

We conducted three studies to test the ease-of-evaluation account of the sorting effect. In Study 1, participants evaluated 10 options sorted on one of two different attributes that differ in evaluability. Study 1 demonstrates that the less evaluable attribute becomes more influential when options are sorted on it, whereas for the easily evaluable attribute the choice of sorting attribute does not affect its weight. Study 2 further tested the prediction by manipulating the ease of evaluation. When evaluation is rendered easier for an attribute on which the options are not sorted, attribute levels can be processed more readily, and the sorting effect is eliminated. Finally, Study 3 uses eye-movement data to further investigate the underlying role of processing ease. Attention to a less evaluable attribute as well as the time needed to evaluate individual levels of this attribute decreases when options are sorted according to it. A mediation analysis

also indicates that the ease of attribute level evaluation mediates the effect of choice of sorting attribute on the weight of the less evaluable attribute. This finding provides more evidence of decreased effort in evaluating options and thus supports the ease-of-evaluation theory.

STUDY 1: THE SORTING EFFECT AND THE ROLE OF ATTRIBUTE EVALUABILITY

A first study aims to investigate how option attractiveness is affected by the choice of the attribute on which options are sorted. Moreover, we examine whether this sorting effect is moderated by attribute evaluability. To test this, we first examine the effect of the choice of sorting effect on the influence of the different attributes in respondents' evaluations. However, the sorting effect should not only be reflected in the influence of attributes on product evaluations (i.e., the attribute weights), but also on the final product evaluation itself. Therefore we expect that options with a good value on the hard-to-evaluate attribute will be evaluated as more attractive when the options are sorted on this particular attribute versus when options are sorted on another attribute.

Method

Sixty-four students (mean age = 20.37 years, SD = 1.94; 40 women) participated in a lab experiment in return for a small fee. They received information about 10 different fictional Internet subscription options (labeled A to J). All subscriptions were described according to two attributes: monthly *subscription cost* (in Euros) and *download speed* (in megabytes per second

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[Mbps]). The subscription costs ranged from 10 to 60 Euros per month, and the download speed

ranged from 4 to 30 Mbps. Across the 10 Internet subscriptions, the values of these attributes

were unrelated ($r = .06$). For half of the participants, the options were sorted on download speed,

whereas for the other half, the options were sorted by monthly subscription cost. All participants

indicated the attractiveness of the subscriptions on a scale from 0 (very unattractive) to 100 (very

attractive).

With a pretest, we assessed evaluability for both attributes using two different measures.

First, using Hsee's (1996) measure of evaluability, 50 respondents (mean age = 36.90 years, SD

= 15.76; 27 women) rated how well they could evaluate a given attribute level for both attributes

on a four-point bipolar scale (1 = "I don't have any idea"; 4 = "I have a clear idea"). The results

show that they regarded subscription cost as significantly more evaluable than download speed

($M = 2.76$ vs. $M = 1.94$, $t(49) = 5.10$, $p < .001$). Second, the respondents evaluated the attributes

on a two-item scale, adapted from the attribute characteristics scale of Luce et al. (2000), which

measures ease of comprehension. On a 100-point scale, they indicated the degree to which they

believed that the levels of the attributes (1) could be understood without comparisons with other

attribute levels and (2) are expressed in easily understandable units (Cronbach's α = .77 for

subscription cost, .82 for download speed). The respondents evaluated subscription cost as more

comprehensible than download speed ($M = 66.73$ vs. $M = 46.56$, $F(1,49) = 27.35$, $p < .001$).

Results

To investigate how the sorting effect influences respondents' product evaluation, we first

examine how the choice of sorting attribute affects the weight of the two attributes and second

how it affects the attractiveness ratings.

To investigate the effect of choice of sorting attribute on attribute weight, we used a regression analysis to derive these weights (Van Ittersum, Pennings, Wansink, & Van Trijp, 2007). Because respondents had rated the attractiveness of all ten choice options, option evaluation was nested within respondents. This necessitates the use of multilevel regression analysis. Multilevel regression analysis requires a specification of the appropriate error structure, guided by statistical criteria such as Akaike's information criterion (AIC). In our analysis, the most suitable error covariance structure was unstructured, which supports both correlations between measurements and differing variances of measurements. To estimate degrees of freedom in the statistical tests, we used Satterwaite's approximation, which may produce fractional degrees of freedom (Littell, Stroup, & Freund, 2002)[1].

The interpretation of multilevel regression parameter estimates is the same as in an ordinary linear regression, but the standard errors of the parameters are adjusted to acknowledge that participants evaluated all 10 Internet subscriptions (Snijders & Bosker, 1999). The beta weights reflect the relative influence (weight) of each attribute (Harte & Koele, 1995; Westenberg & Koele, 1994). As such, the results give us an indication if options with better values on the included attributes will be perceived as more attractive.

Our estimated regression model included the evaluation of the Internet subscriptions as the dependent variable, whereas the scores on both attributes were continuous variables. The choice of sorting attribute appeared as a dummy variable. As we illustrate in Table 1, the regression model also included all possible interactions. To investigate the effect of choice of

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[1] In our analysis, the most suitable error covariance structure was unstructured (AIC = 5293.11 is smaller than for any other covariance structure). The present model that includes all possible interactions has the best fit (-2 Restricted Log Likelihood = 5183.11 is smaller than for other tested models).

sorting attribute on the weight of attributes in consumers' evaluations, we focused mainly on the interaction terms between sorting and the attributes (*subscription cost × sorting* and *download speed × sorting*). To facilitate the interpretation of these interactions, we standardized both attributes, so the regression coefficients associated with the attributes indicate the increase in attractiveness associated with a 1SD increase on the attribute, conditional on the other attribute having an average level.

Table 1: Multilevel regression results for the prediction of Internet subscription attractiveness (Study 1)

Parameter	Estimate	Standard Error	t-value	*p*-value
Intercept	41.64	1.65	25.17	$< .001$
Sorting (on subscription costs=1; on download speed=0)	.57	2.34	.24	.81
Subscription cost	-19.75	.91	-21.75	$< .001$
Download speed	19.48	.93	20.86	$< .001$
Subscription cost × download speed	-7.88	1.07	-7.38	$< .001$
Subscription cost × sorting	2.00	1.29	1.56	.12
Download speed × sorting	-3.15	1.26	-2.50	.014
Subscription cost × download speed × sorting	1.99	1.52	1.31	.19

On average, the consumers' evaluate an Internet subscription as more attractive when the monthly subscription cost decreases and the download speed increases (as indicated by the respective conditional effects). In addition, the interaction between the two attributes reveals that participants trade off the values of both attributes to evaluate attractiveness (Westenberg & Koele, 1994). More relevant for this research, however, is the interaction between both attributes and the choice of sorting attribute. The influence of download speed on the perceived

attractiveness is significantly lower when the options are sorted on subscription cost ($\beta = 16.33$, $t(62.92) = 19.30$, $p < .001$) rather than on download speed ($\beta = 19.48$, $t(62.14) = 20.86$, $p < .001$). In contrast, the influence of subscription cost on perceived attractiveness is not subject to a sorting effect, as is illustrated by the nonsignificant interaction between subscription cost and choice of sorting attribute ($\beta = 2.00$, $t(124.03) = 1.56$, $p = .12$). Although the choice of sorting attribute affects the influence of download speed, it does not influence the trade-off between download speed and subscription cost. Participants require approximately the same increase in download speed to warrant a given price increase, across both rankings.

To clarify how the sorting effect influences the weight of download speed, we conduct a slope analysis. As Figure 1 depicts, the slope of download speed – representing its weight – is steeper when the options are sorted on download speed than when they are sorted on subscription cost. However, although the three-way interaction between download speed, subscription cost and choice of sorting attribute is not significant, the trade-off between download speed and subscription cost (i.e., their two-way interaction) implies a qualification of the interaction of download speed and choice of subscription cost. In fact, simple slopes analysis reveals that the slope of download speed increases significantly when sorting on download speed when the subscription cost is low (1 SD below the mean; $\beta = 5.14$, $t(119.92) = 2.46$, $p = .015$) but not when the cost is high (1 SD above the mean; $\beta = 1.16$, $t(122.42) = .63$, $p = .53$).

Finally, we investigate how the sorting effect influences respondents' product evaluation, by examining if options with a good value on subscription costs are evaluated as more attractive. A spotlight analysis reveals that good options may benefit from sorting on download speed. Indeed, fast and cheap Internet subscriptions are evaluated as significantly more attractive when the subscriptions were sorted on download speed versus when sorted on subscription cost ($M_{dl} =$

89.22 vs. M_{sc} = 82.14, $t(58)$ = 2.62, p = .011). This difference, however, is not obtained for more

expensive and fast subscriptions (M_{dl} = 33.61 vs. M_{sc} = 33.93, $t(58)$ = .08, p = .93), for slow and

cheap Internet subscriptions (M_{dl} = 37.91 vs. M_{sc} = 32.76, $t(58)$ = 1.13, p = .26) or for slow and

costly subscriptions (M_{dl} = 13.16 vs. M_{sc} = 10.25, $t(58)$ = 1.66, p = .10).

Figure 1: Effect of sorting on the evaluation of Internet subscriptions (Study 1)
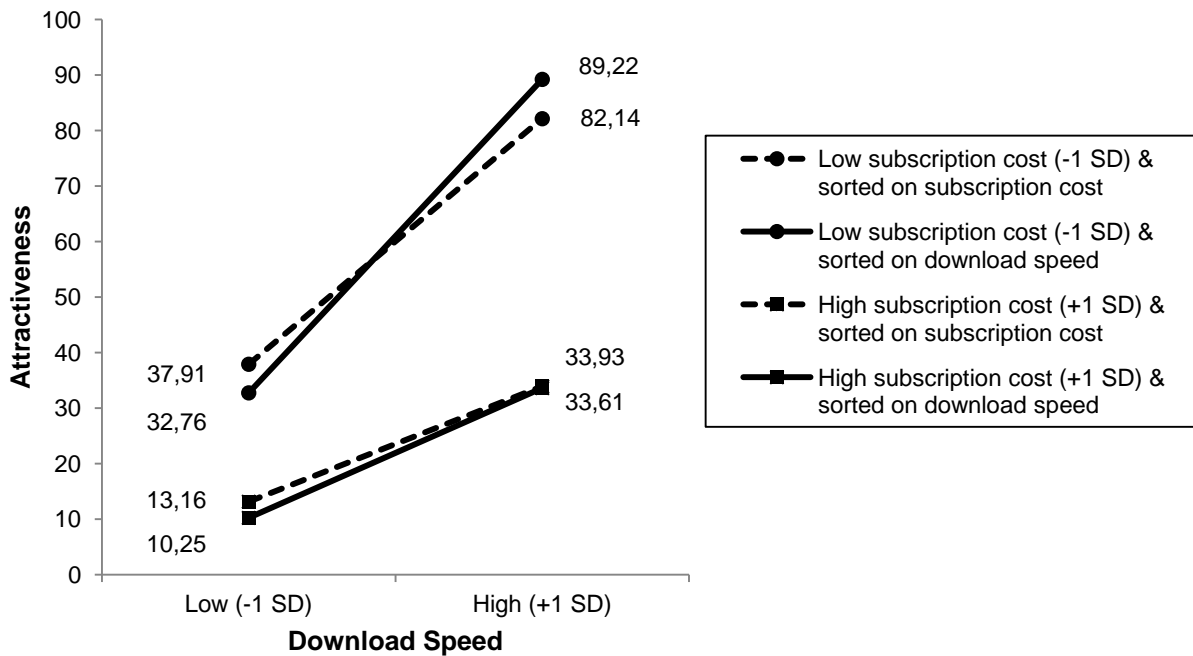
Discussion

The results of Study 1 support our theorizing about the effect of choice of sorting

attribute on the evaluations of the presented choice options. First, the choice of the sorting

attribute affected the influence of the attributes on product evaluation. Sorting options on a

particular attribute increases the attribute's role in respondents' evaluations. Second, this sorting

effect appears to be restricted to the less evaluable attribute (download speed) and does not apply

to the more evaluable attribute (subscription cost). Third, the difference in the weight of the hard-to-evaluate attribute had consequences for option evaluation. Options with a good value on the hard-to-evaluate attribute are judged as more attractive when the options are sorted according to this attribute. The decision model itself seems unaffected: People continue to engage in compensatory evaluation, using the same trade-off between the two attributes.

Overall, the results are consistent with the ease-of-evaluation explanation, since decreasing the effort of using an attribute increases its influence on the perceived attractiveness. Because evaluable attributes are already easy to use, the sorting effect is limited to hard-to-evaluate attributes. To find more evidence for the proposed ease-of-evaluation mechanism, we manipulate the ease of evaluating the attributes in Study 2.

STUDY 2: THE ROLE OF EASE OF EVALUATION

Study 2 aims to replicate and extend Study 1 by investigating the underlying mechanism of the sorting effect further. In particular, we examine the role of ease of evaluation by investigating the sorting effect when we facilitate the evaluation of all attributes. We present participants with a table in which we use colors to indicate good, medium and bad attribute values. As illustrated by the findings of Study 1, people make both comparisons within each attribute (i.e., the conditional effects of the product attributes) and between the attributes (i.e., the interaction between the attributes). By color coding the attributes, we expect that both comparisons become easier. Colors introduce a second sorting, which makes it easier to assess the position of an attribute level in its distribution, even when the options are not sorted on that attribute. Moreover, it becomes easier to find options with good levels on both attributes. Hence,

making it easier to evaluate levels of that attribute should attenuate the sorting effect for the less evaluable attribute.

Method

We randomly assigned 140 participants (mean age = 27.76 years, SD = 12.69; 81 women) to the conditions of a 2 (choice of sorting attribute) × 2 (ease of evaluation: control vs. facilitated) between-subjects online experiment. Respondents read a scenario that asked them to place themselves in the role of a person looking for a new job. They then evaluated 10 fictional job offers from unknown companies, giving each offer a value between 0 (very unattractive) and 100 (very attractive). To avoid possible name effects, the company names were counterbalanced. All job offers listed two attributes with different evaluability, and we manipulated the choice of the sorting attribute. Moreover, we manipulated the ease with which the attribute levels of both attributes could be evaluated. Half of the respondents were presented the normal version of the ranking (control condition), and the other half received a version in which the use of colors facilitated the attribute-level evaluation (facilitated condition). For both attributes, we used green to indicate the four best values, yellow for three medium values, and red for the three worst values. Even if the options were not sorted on a particular attribute, it was still very easy to evaluate an option as good, medium, or bad.

A pretest with fifty respondents (mean age = 36.82 years, SD = 15.69; 26 women) confirmed that the two attributes wage (in Euros) and commuting time (in minutes) differed in their evaluability. The respondents evaluated the two attributes on the same evaluability scale and ease of comprehension measures from Study 1 (Cronbach's α = .73 for wage, .85 for

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commuting time). The results indicate that wage was significantly more evaluable ($M = 3.42$ vs.

$M = 2.94$, $t(49) = 3.22$, $p = .002$) and comprehensible ($M = 80.10$ vs. $M = 63.64$, $F(1,49) = 15.36$,

$p < .001$) than commuting time. We included wage, ranging from 1,650 to 2,200 Euro per month,

as the evaluable attribute and commuting time, from 20 to 70 minutes, as the less evaluable

attribute. Across the 10 job offers, these attributes were uncorrelated ($r = .05$).

Results

Making it easier to evaluate the attribute levels for a less evaluable attribute should

eliminate the sorting effect. To test this proposition, we estimated a multilevel regression

analysis with the evaluation of the job offers as the dependent variable and both job attributes as

continuous variables. The choice of sorting attribute and the evaluability of attribute levels

represented factors in our model. To facilitate the interpretation of the results, we standardized

the values for both attributes. The model also included all main effects and interactions (see

Table 2)[2].

On average, respondents evaluate a job as more attractive as wage increases and

commuting time decreases. An interaction between these attributes indicates that participants

also trade-off both attributes for their evaluation. Moreover, ease of evaluation moderates the

sorting effect. The three-way interaction of commuting time, choice of sorting attribute, and ease

of evaluation was significant ($\beta = 4.94$, $t(259.01) = 2.09$, $p = .038$); that is, the effect of the

choice of sorting attribute on the weight of commuting time depends on the presence or absence

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[2] In our analysis, the most suitable error covariance structure was unstructured (AIC = 11626.14 is smaller than for
any other covariance structure). The present model that includes all possible interactions has the best fit (-2
Restricted Log Likelihood = 11516.14 is smaller than for other tested models).

of color coding. In contrast, the three-way interaction among wage, choice of sorting attribute, and ease of evaluation was not significant ($\beta = 2.18$, $t(255.86) = .94$, $p = .35$), so ease of evaluation does not moderate the effect of choice of sorting attribute on the weight of wage information. We summarize the rankings' effects on consumers' evaluation for each level of ease of evaluation in Table 2.

Table 2: Multilevel regression results for the prediction of job attractiveness

(Study 2)

Parameter	Control condition	Facilitated (color) condition
Intercept	50.44***	54.03***
	(2.01)	(1.82)
Sorting (on wages=1; on commuting time=0)	-2.17	-9.61*
	(2.97)	(2.77)
Wage	12.88***	15.07***
	(1.05)	(.99)
Commuting time	-18.08***	-14.52***
	(1.40)	(1.07)
Wage × commuting time	-4.66***	-5.00***
	(1.05)	(1.13)
Wage × sorting	2.15	1.84
	(1.69)	(1.51)
Commuting time × sorting	5.86*	-.72
	(1.81)	(1.36)
Wage × commuting time × sorting	2.51	1.24
	(1.52)	(1.55)

Notes: Standard errors are in parentheses.
* $p < .05$.
*** $p < .001$.

Consistent with Study 1, in the *control condition*, the choice of sorting attribute affects the weight of the less evaluable attribute but not of the evaluable attribute. In particular, the weight of commuting time is higher when the options are sorted on commuting time ($\beta = -18.08$, $t(66.73) = -12.94$, $p < .001$) than when they are sorted on wage ($\beta = -12.22$, $t(68.95) = -10.63$, p

< .001). Yet we find no significant effect of the choice of sorting attribute on the weight of the more evaluable attribute, wage ($\beta = 2.15$, $t(125.07) = 1.27$, $p = .21$).

As in Study 1, we follow up the analyses by examining the simple slopes and conducting point-comparisons. We first focus on the control condition in which no colors were used to facilitate attribute level evaluation (Figure 2A). The slope (or weight) of commuting time increases significantly when sorting on commuting time (vs. on wage) when wage is high (1 SD above the mean; $\beta = 8.37$, $t(136.62) = 3.25$, $p = .001$), but not when wage is low (1 SD below the mean; $\beta = 3.35$, $t(121.17) = 1.57$, $p = .12$).

Furthermore, we look at the effect of sorting on respondents' perceived attractiveness. When wages are high, a job closer to home (commuting time 1 SD below the mean) is evaluated as more attractive when jobs were sorted on commuting time as compared to when they are sorted on wage ($M_{ct} = 86.06$ vs. $M_{wa} = 77.67$, $t(68) = 2.51$, $p = .015$). In addition, more distant jobs are evaluated as less attractive when jobs are sorted on commuting time versus when they are sorted on wage ($M_{ct} = 40.58$ vs. $M_{wa} = 48.92$, $t(68) = -1.93$, $p = .058$). No differences were found for jobs with lower wages, neither when commuting time was long ($M_{ct} = 24.13$ vs. $M_{wa} = 23.17$, $t(68) = .23$, $p = .82$) nor short ($M_{ct} = 50.98$ vs. $M_{wa} = 43.31$, $t(68) = 1.65$, $p = .10$). This pattern of results is similar to those obtained in Study 1.

Figure 2: Sorting effect on the evaluation of jobs (Study 2)

A) Control Condition
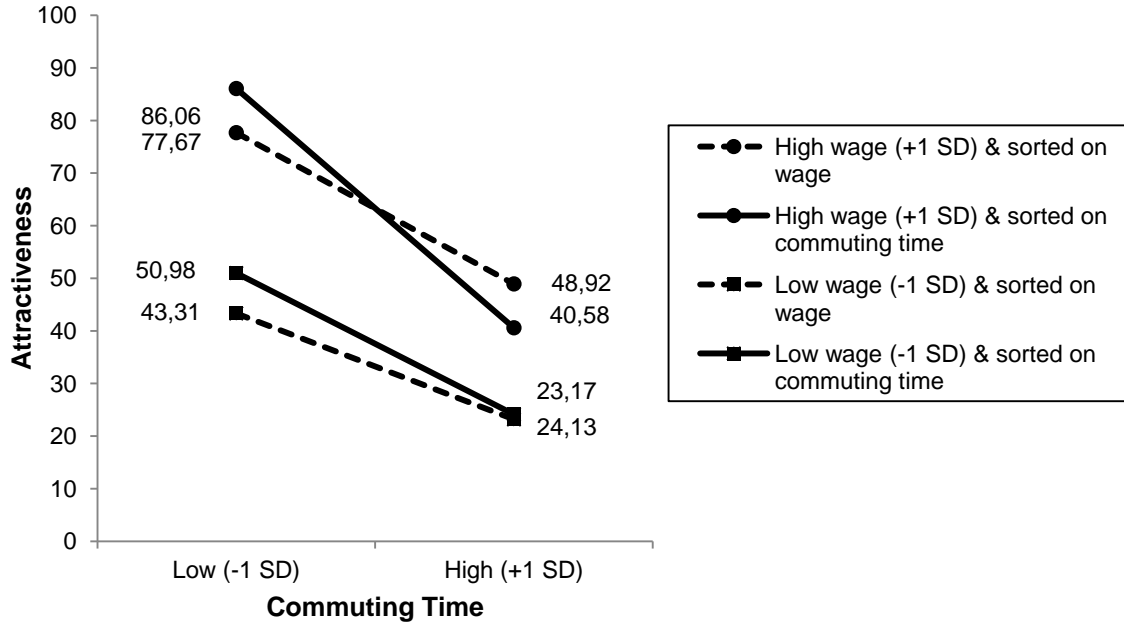
B: Facilitated Condition
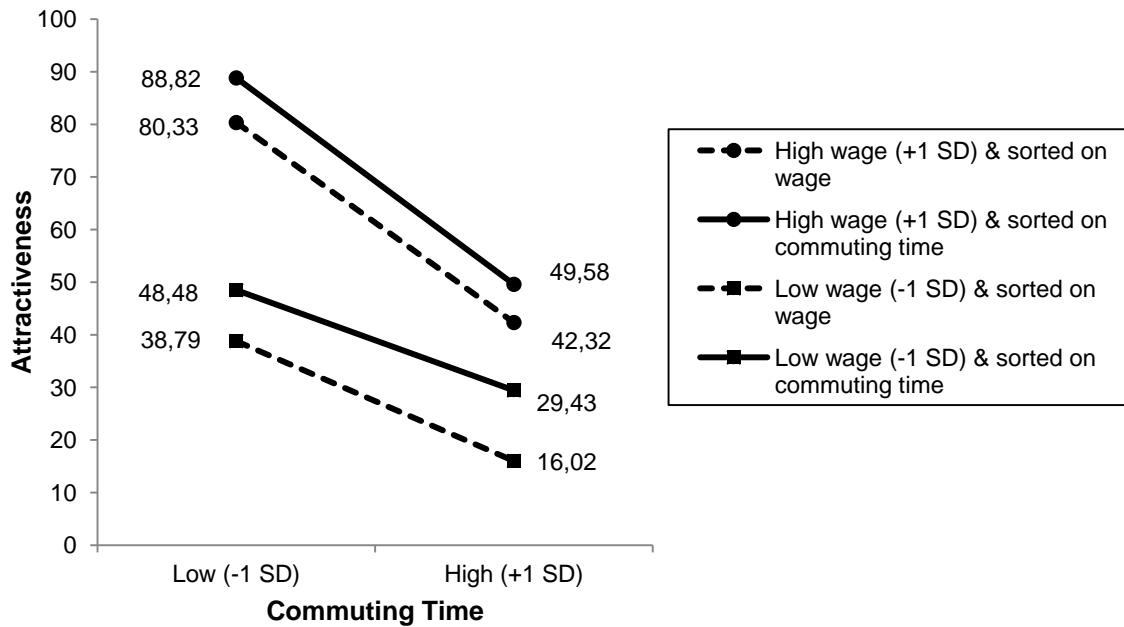
When attribute levels can be compared more easily (*facilitated condition*), the sorting effect disappears. The weight of commuting time is not significantly affected by the choice of sorting attribute ($\beta = -.72$, $t(121.62) = -.59$, $p = .60$), nor is the weight of wage ($\beta = 1.84$, $t(132.47) = 1.22$, $p = .23$). Interestingly, a main effect of choice of sorting attribute on job attractiveness ratings emerged. Jobs are generally evaluated better when sorted on commuting time, irrespective of the level of wage and the level of commuting time. When the wage is low (1 SD below the mean), both closer jobs (commuting time 1 SD below the mean; $M_{ct} = 48.48$ vs. $M_{wa} = 38.99$, $t(68) = 2.24$, $p = .028$) and more distant jobs (commuting time 1 SD above the mean; $M_{ct} = 29.43$ vs. $M_{wa} = 16.02$, $t(68) = 3.33$, $p = .001$) are evaluated as more attractive when sorted on commuting time. The same is found when the wage is higher (wage 1 SD above the mean), both for closer jobs (commuting time 1 SD below the mean; $M_{ct} = 88.62$ vs. $M_{wa} = 80.33$, $t(68) = 3.69$, $p < .001$) and more distant jobs (commuting time 1 SD above the mean; $M_{ct} = 49.58$ vs. $M_{wa} = 42.32$, $t(68) = 1.74$, $p = .086$). Still, this main effect does not alter the fact that the use of color codings eliminated the effect of choice of sorting attribute on the weight of commuting time, as predicted.

Discussion

The results of Study 2 offer additional support for the ease-of-evaluation theory as the underlying process of the sorting effect. In the control condition, the choice of sorting attribute only affects the weight of the less evaluable attribute (commuting time) in respondents' judgments. Moreover, we find that options with a good value on commuting time were evaluated as more attractive when sorted on this attribute, while options with a poor value on commuting

time were evaluated as less attractive. The sorting effect disappears completely though when the product list used color coding to make the evaluation of the levels of both attributes easier. By manipulating the ease with which respondents could evaluate the attribute levels, instead of treating it as an attribute characteristic, we show that differences in the effort associated with evaluating attribute levels is essential for the sorting effect to occur. While we did not find a sorting effect when evaluations are facilitated, we found a main effect of choice of sorting attribute on respondent's product evaluation. Unexpectedly, respondents evaluated options as generally more attractive when they were sorted on commuting time versus when they were sorted on wage.

STUDY 3: THE EFFECT ON EYE MOVEMENTS

The first two studies provided support for the ease-of-evaluation framework by demonstrating that influencing the ease of processing the information included in the multi-option multi-attribute table has an effect on how consumers evaluate the attractiveness of the options. With Study 3, we aim to obtain more evidence for the underlying mechanism of the sorting effect by using eye-movement data. The use of eye movement data potentially offers interesting insights into the information acquisition processes of consumers (Glaholt & Reingold, 2011; Russo, 2011). As such, eye tracking has been used in studying attention towards commercials (Teixeira, Wedel, & Pieters, 2012; Woltman-Elpers, Wedel, & Pieters, 2003) and print advertisements (Pieters, Rosbergen, & Wedel, 1999). According to previous research, eye movements relate directly to cognitive processes, such that the total viewing time increases with increasing levels of processing (Rayner, 1998; Velichkovsky, 1999). Similarly, eye movements

might reveal how consumers process the information in multi-option multi-attribute tables.

Previous research has shown that people spend more time processing the top half than the bottom half of a product list (Galesic, Tourangeau, Couper, & Conrad, 2008), thus focusing on attention division across options. The current study investigates the division of attention across the two included attributes. Our theoretical framework implies that sorting options on the less evaluable attribute should *decrease* attention towards this attribute, because sorting options according to this attribute enables consumers to evaluate each specific attribute level more easily (Viswanathan & Narayanan, 1994). In fact, the time needed to evaluate a level of the less evaluable attribute should be shorter if options are sorted on this attribute than if they were not sorted on this attribute. The lessened evaluation time—an indicator for ease of evaluation—in turn should increase the weight of the less evaluable attribute.

Method

To test the underlying mechanisms, we repeated the first study while recording respondents' eye movements. Fifty-eight students participated in a lab experiment in exchange for a gift (mean age = 21.60 years, SD = 3.32; 38 women). All respondents had normal or corrected-to-normal vision, and none had participated in eye-tracking research before. Participants were randomly assigned to one of two conditions, in which they considered a product evaluation task involving 10 fictional Internet subscriptions. For all these options, they received information about both subscription cost (the more evaluable attribute) and download speed (the less evaluable attribute). Depending on the condition, the options were sorted according to one of the two attributes. Participants evaluated the 10 Internet subscriptions and

assigned each subscription a score between 0 and 100. As in Study 1, subscription costs ranged

from 10 to 60 Euros per month, and download speed ranged from 4 to 30 Mbps. The two

attributes were uncorrelated ($r = .06$) and standardized prior to analysis to facilitate our

interpretation.

Collection of Eye Movement Data

A remote eye tracking system (SensoMotoric Instruments) recorded eye movements, with

a sampling rate of 60 Hz and an accuracy of 0.40° (as recommended for eye tracking research).

All the instructions appeared on a 22" LCD monitor with a resolution of 1280×1024 pixels.

Placed at a distance of 70–80 centimeters, the equipment allows for free head movement in a

virtual box of approximately 40 centimeters. An infrared-sensitive video camera, positioned

below the computer monitor, observes the subject's eyes, and specialized image software

generates the accompanying x,y coordinates for respondents' gaze.

Participants first engaged in a calibration to adjust the system to each person's eye

movements. After a short warming-up eye-tracking task to help respondents become accustomed

to the task environment, they received the tables with the 10 options and were asked to evaluate

them. The table contained the rank of the options, the subscription names, cost information, and

download speed information. Around each section, non-overlapping areas of interest (AOI) were

defined to track how long and how often participants inspected each attribute level for any of the

10 options. For the final analyses, we focused on the AOIs of the two attributes.

To investigate effort, we looked at three indicators of interest produced by the eye-

movements (see Appendix 1 for a more detailed description). First, we investigated respondents'

attention toward the two included attributes. We expect that respondents pay less attention to the hard-to-evaluate attribute when the options are sorted on this attribute (as compared to when options are sorted on subscription costs). Therefore, we looked at the fixation duration toward the AOIs by recording the total time (in seconds) a participant attended to a particular AOI. For example, the fixation time for download speed, consists of the sum of all the seconds a respondent looks at any of the 10 download speed levels. We also recorded the number of fixations on AOIs and the gaze duration, but these measures were almost perfectly correlated ($r >$ .90) with nearly identical results, so we only discuss fixation duration.

Second, we look at the number of transitions a respondent makes between the levels of an attribute. When an attribute is ranked, it becomes easier for people to understand how good an attribute level is, without comparing it to other levels of the attribute (e.g., people know that the second ranked option has the second best value on the sorting attribute). We tallied respondents' switches from one level of an attribute to another level of the same attribute, which gives us an indicator of the number of comparisons participants made between different levels of each of the two attributes. We only tallied switches within each attribute.

Third, we focus on the time spent on the attribute level information of each attribute. We calculated this measure by dividing the total attention towards an attribute by the number of fixations on any of the levels of this attribute, resulting in the average time (in seconds) participant spend on a level of each attribute. In contrast to the overall attention (i.e., fixation duration), this indicator gives us an estimate of how much time people need to process individual attribute levels. We expect that the average time to evaluate attribute levels decreases for the hard-to-evaluate attribute, when the options are sorted on this attribute. Indeed, this variable decreases, as people need less time to examine an attribute.

Results

Influence of Choice of Sorting Attribute on Perceived Attractiveness.   We again

modeled the participants' ratings using a multilevel regression model[3], including choice of

sorting attribute as a factor, both attributes as continuous variables, and all interactions. The

results of our analyses show that the attractiveness of the Internet subscriptions increases as

subscription cost decreases and download speed increases. A significant interaction between the

two attributes indicates a trade-off. Furthermore, the results show that the choice of sorting

attribute affects the weight of the two attributes. As summarized in Table 3, the weight of

download speed is higher when options are sorted on download speed rather than on subscription

cost ($\beta = -2.94$, $t(101.52) = -2.91$, $p = .004$). In contrast with the findings of our previous studies,

we also find a significant effect on the weight of the evaluable attribute subscription cost ($\beta =$

2.72, $t(96.33) = 2.42$, $p = .017$). Interestingly, the weight of subscription cost decreases when

options are sorted on this attribute. Moreover, we find a significant three-way interaction,

suggesting that the trade-off between both attributes is affected by the choice of sorting attribute

($\beta = 3.43$, $t(109.29) = 2.17$, $p = .033$).

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[3] In our analysis, the most suitable error covariance structure was unstructured (AIC = 4638.65 is smaller than for
any other covariance structure). The present model that includes all possible interactions has the best fit (-2
Restricted Log Likelihood = 4528.65 is smaller than for other tested models).

Table 3: Multilevel regression results for the prediction of Internet subscription attractiveness (Study 3)

Parameter	Estimate	Standard Error	t-value	p-value
Intercept	34.39	1.24	27.83	< .001
Sorting (on subscription cost=1; on download speed=0)	-4.02	2.07	-1.94	.057
Subscription cost	-16.33	.75	-21.90	< .001
Download speed	18.19	.80	22.87	< .001
Subscription cost × download speed	-10.38	1.01	-10.30	< .001
Subscription cost × sorting	2.72	1.12	2.42	.017
Download speed × sorting	-2.94	1.01	-2.91	.004
Subscription cost × download speed × sorting	3.43	1.58	2.17	.033

A simple slope analysis replicates our previous findings for the less evaluable attribute. As illustrated by Figure 3, the slope of download speed increases significantly when sorting on download speed when the subscription cost is low (1 SD below the mean; β = -5.77, $t(109.19)$ = -2.74, p = .007), but not when the cost is high (1 SD above the mean; β = -.01, $t(87.90)$ = -.08, p = .99). A spotlight analysis revealed that for cheaper internet subscriptions, a fast internet subscription (download speed 1 SD above the mean) is evaluated as significantly more attractive when options are sorted on download speed than when options are sorted on subscription costs (M_{dl} = 79.29 vs. M_{sc} = 66.19, $t(56)$ = 3.58, p < .001), while no effect was found for slow internet subscriptions (download speed 1 SD below the mean; M_{dl} = 21.80 vs. M_{sc} = 22.16, $t(56)$ = .10, p = .92). No effects, however, are found for more expensive subscriptions. As in Study 1, there are no significant effects of the choice of sorting attribute on the evaluated attractiveness of fast expensive Internet subscriptions (M_{dl} = 25.87 vs. M_{sc} = 25.05, $t(56)$ = .27, p = .79) and slow expensive Internet subscriptions (M_{dl} = 10.25 vs. M_{sc} = 8.47, $t(56)$ = 1.46, p = .15).

Figure 3: Sorting effect on the evaluation of Internet subscription (Study 3)
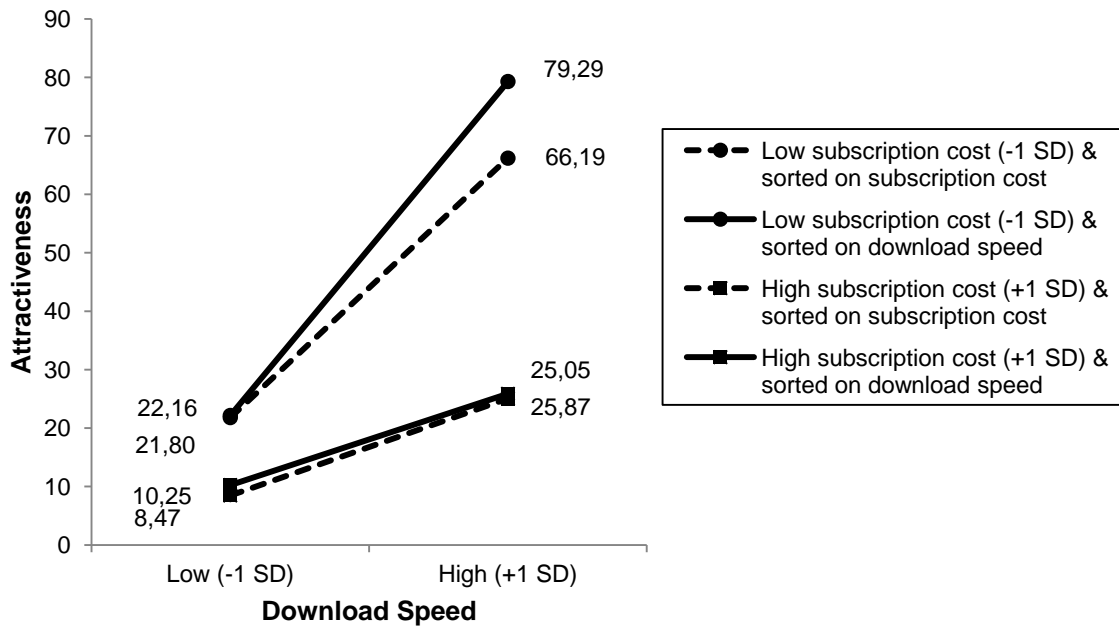
Influence of Choice of Sorting Attribute on Attention. To further investigate the role of effort and, hence provide support for the ease-of-evaluation mechanism, we studied the change in attention paid to the attributes. More attention to an object indicates more processing. The proposed mechanism suggests that the attribute on which the options are sorted should be processed more easily and thus faster and, hence, respondents should pay less attention to an attribute when options are sorted on it, especially if it is a less evaluable attribute.

To examine these possibilities, we compared respondents' fixation duration toward the included attributes across the two conditions. Because we obtained data for the fixation durations of both attributes for each respondent, we subjected these data to a mixed-design ANOVA, with the choice of sorting attribute as a between-subjects variable and the attributes as within-subjects variables. On average, respondents pay more attention to the download speed information than to the subscription cost information ($M_{dl} = 17.05$ vs. $M_{sc} = 12.56$, $F(1,56) = 44.32$, $p < .001$).

Moreover, the choice of sorting attribute has a significant effect on attention to download speed information. As shown in Figure 4, fixation duration toward the download speed information is longer if the options are sorted on subscription costs rather than download speed ($M_{sc} = 19.27$ vs. $M_{dl} = 15.12$; $F(1,56) = 4.17$, $p = .046$). In contrast, the choice of sorting attribute has no significant effect on the fixation duration for subscription cost ($M_{sc} = 11.24$ vs. $M_{dl} = 13.71$; $F(1,56) = 1.40$, $p = .24$). This pattern of results is in line with the ease of evaluation mechanism.

Figure 4: Sorting effect on the fixation duration (Study 3)
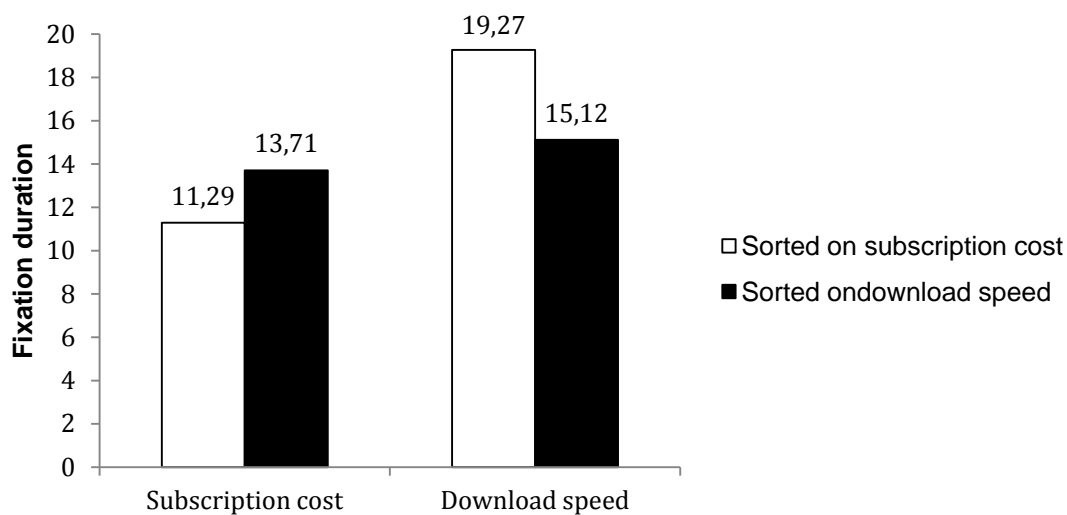
The ease of evaluation mechanism also implies that the decrease in attention to the less evaluable attribute, download speed, results from a decreased number of comparisons between different levels of download speed to interpret a given level. We therefore tested the effect of choice of sorting attribute on the number of transitions between different levels of download speed, on the one hand, and between different levels of subscription cost on the other hand. A mixed-design ANOVA reveals that respondents make more transitions between levels of download speed information than between levels of subscription costs ($M_{dl} = 22.93$ vs. $M_{sc} =$

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15.07, $F(1,56) = 24.34$, $p < .001$); this supports our contention that the evaluation of download speed levels requires more comparisons than the evaluation of subscription cost. Further, in line with our hypotheses, the number of transitions with respect to levels of download speed are higher when the options are sorted on subscription cost rather than on download speed ($M_{sc} = 27.07$ vs. $M_{dl} = 19.32$, $F(1,56) = 5.40$, $p = .024$). The number of transitions of subscription cost levels does not significantly differ across both sortings ($M_{sc} = 12.22$ vs. $M_{dl} = 17.55$, $F(1,56) = 2.29$, $p = .14$). This is illustrated in Figure 5.

Figure 5: Sorting effect on the number of attribute level comparisons (Study 3)
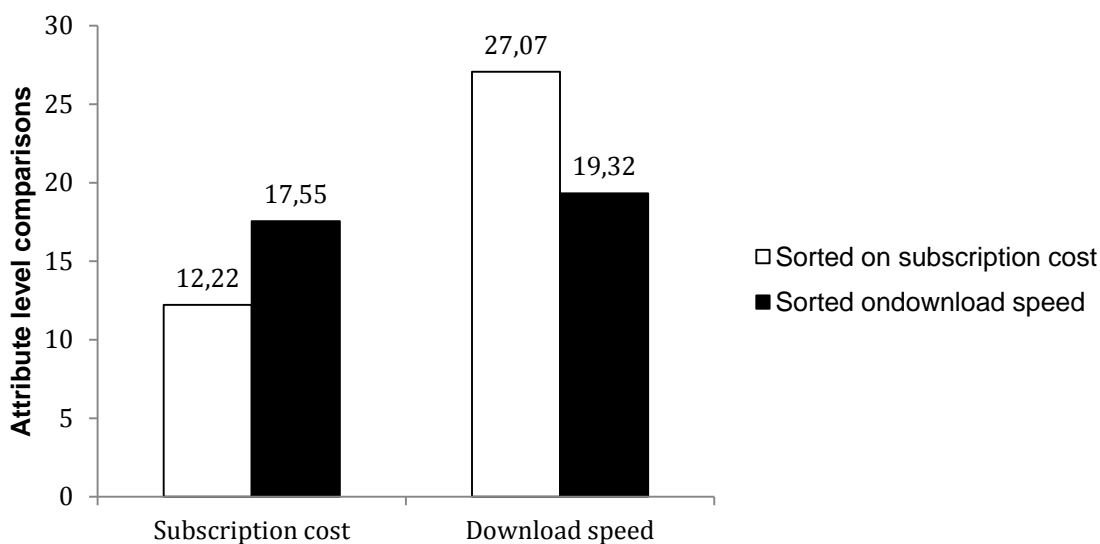
A mediation analysis tests if the relationship between the choice of sorting attribute and attention toward the less evaluable attribute (i.e., download speed) can be explained by a change in number of attribute level comparisons. The previous analyses already indicate that the choice of sorting attribute significantly affects both attention to download ($\beta = -4.15$, $t(56) = -2.04$, $p = .046$) and the number of comparisons with respect to download speed ($\beta = -7.75$, $t(56) = -2.32$, p

= .024). The number of comparisons also significantly predicts attention such that more comparisons obviously imply more attention ($\beta = 5.02$, $t(56) = 10.79$, $p < .001$). In a simultaneous regression predicting attention, the number of comparisons remains a significant predictor ($\beta = .50$, $t(55) = 10.79$, $p < .001$); the effect of the choice of sorting attribute becomes nonsignificant ($\beta = -.26$, $t(55) = -.21$, $p < .83$), indicating mediation. A bootstrap analysis for the indirect effect (Preacher & Hayes, 2004) confirms that the mediated effect is significant (95% CI [-7.51, -.58]). Attention to download speed decreases when the options are sorted on download speed because people need fewer comparisons to evaluate levels of download speed in this sorting.

Mediation by Attention. We are interested in whether and how visual attention mediates the effect of choice of sorting attribute on the weight of download speed. We estimated the regression coefficients (measures for attribute weights) for each respondent individually. Specifically we regressed attractiveness ratings on subscription cost, download speed and their interaction for each respondent separately, and saved each respondent's regression estimate. For the mediation analysis, we focused on the beta coefficient of the conditional effect of download speed, which represents the weight attached to download speed for options with an average score on subscription costs.

We have two candidate mediators. First, we measured overall attention to download speed information (i.e., fixation duration). Second, we looked at the average time needed to evaluate individual attribute levels, which serves as a proxy of evaluation ease. The proposed ease-of-evaluation framework predicts that time of download speed evaluation should serve as a mediator, while overall attention should not. The attribute on which the options are sorted should

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be processed more easily and thus faster and respondents should take less time to evaluate an attribute when options are sorted on it, especially if it is a less evaluable attribute. We first focus on the download speed evaluation time.

Figure 6: Sorting effect on the time per attribute evaluation (Study 3)
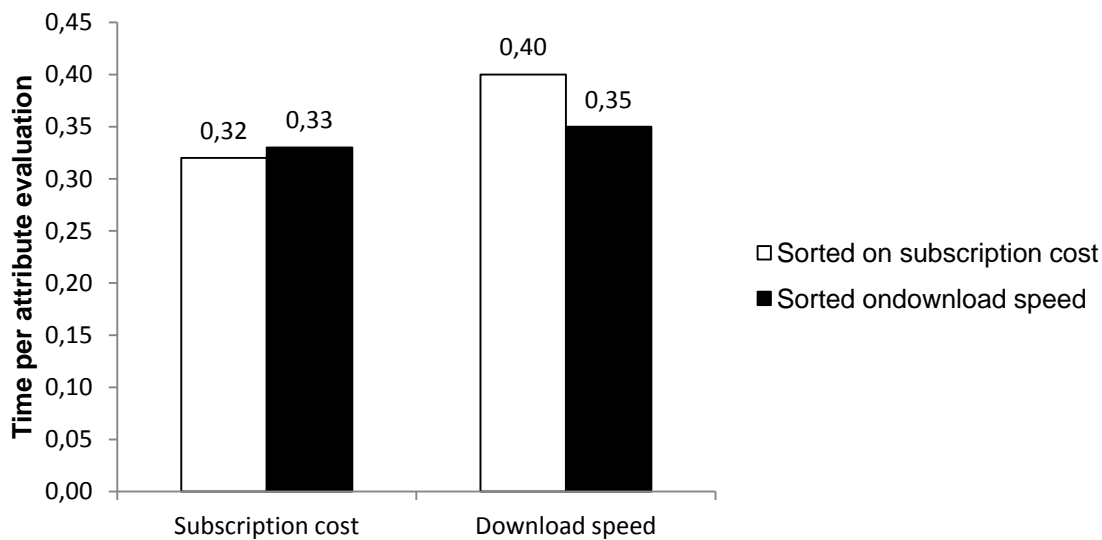
As illustrated in Figure 6, inspection of individual levels of download speed take significantly less time when the options are sorted on download speed (M_{dl} = .35 vs. M_{sc} = .40; $F(1,56)$ = 8.27, p = .006). The time needed to process individual subscription cost information, in contrast, is not significantly affected by the choice of sorting attribute (M_{dl} = .33 vs. M_{sc} = .32; $F(1,56)$ = .206, p = .65). Individual evaluation time mediates the effect of the choice of sorting attribute on the weight of the less evaluable attribute. First, time of download speed evaluation significantly predicts the regression weight of download speed (β = -34.04, $t(56)$ = -3.29, p = .002). Second, in a simultaneous regression predicting the regression weight of download speed, time of download speed evaluation continues to be a significant predictor (β = -30.31, $t(55)$ = -2.73, p = .009), whereas the choice of sorting attribute is not (β = 1.70, $t(55)$ = .94, p = .35).

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Finally, a bootstrap analysis for the indirect effect shows that this mediation is significant (95% CI [.28, 4.42]).

Figure 7: Mediation effect of evaluation time and suppression effect of attention for the download speed attribute (Study 3)

Time per attribute level evaluation
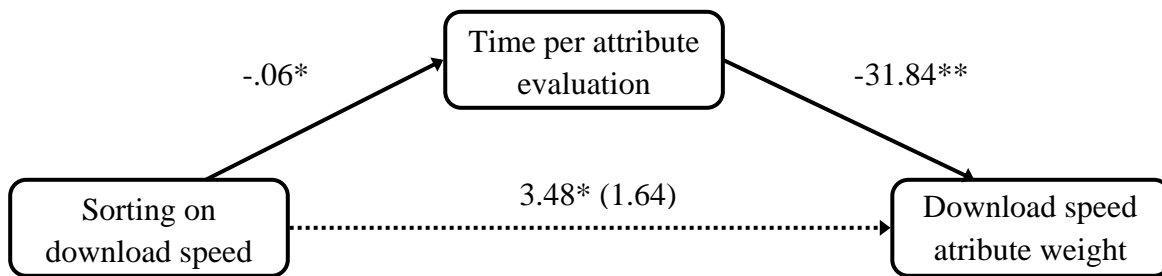
Fixation duration
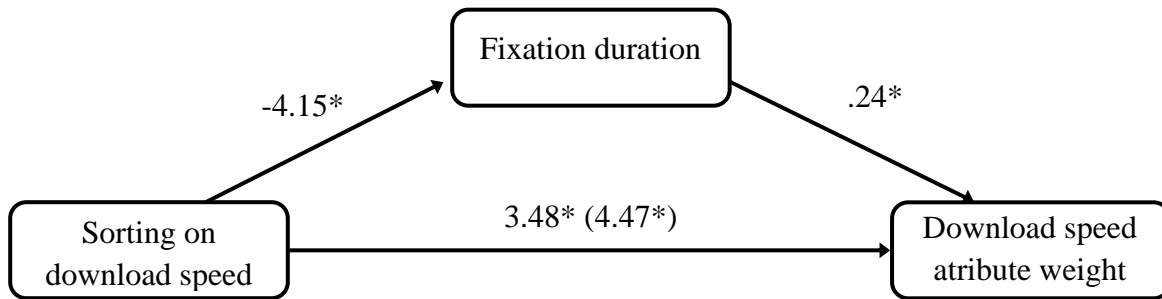
Notes: * $p < .05$; ** $p < .001$

We also tested if overall attention could mediate the effect of choice of sorting attribute on the weight of download speed. However, this mediation analysis reveals a suppression effect. Although sorting options according to download speed causes a decrease in attention to this

attribute (β = -4.15, t(56) = -2.04, p = .046), we find a positive relationship between attention and

attribute weight (β = .24, t(56) = 2.10, p = .041). Moreover, in a simultaneous regression

predicting the weight of download speed, overall attention continues to be a significant predictor

of attribute weight (β = .24, t(55) = 2.10, p = .041), and the choice of sorting attribute becomes

even more significant (β = 4.47, t(55) = 2.48, p = .016). A bootstrap analysis for the indirect

effect indicates that it differs significantly from 0 (95% CI [-2.83, -.07]). This indicates that the

increase in weight of download speed when options are sorted on download speed does not result

from decreased attention to download speed information, but rather occurs in spite of such a

decrease. The mediation models are illustrated in Figure 7.

Discussion

The goal of Study 3 was to provide more evidence for the underlying mechanism by

investigating the eye movements of decision makers when confronted with sorted options in a

multi-option multi-attribute table. As in the first two studies, the findings illustrate a sorting

effect for the less evaluable attribute. In contrast to the previous studies, we also find an effect of

choice of sorting attribute on the weight of the evaluable attribute. However, this effect is

reversed, as sorting options on this attribute decreases its weight in the product evaluation. This

difference with the other studies could be due to the supervised experimental setting of an eye-

tracking experiment.

Moreover, consistent with the ease-of-processing theory, eye movements suggest that the

sorting effect can be explained by the effect of choice of sorting attribute on processing

difficulty. Consistent with previous research (MacKenzie, 1986), we do find that increased

attention leads to higher attribute weights. However, attention to the less evaluable attribute *decreases* when options are sorted on this attribute because the effort of evaluating the levels of the less evaluable attribute decreases. The attribute level evaluation effort probably decreases because the relative position of an attribute level can be inferred more readily when attribute levels are sorted. Despite decreased attention to this attribute when options are sorted on it, its weight does not decline. Rather, the weight of the less evaluable attribute increases when options are sorted on it, regardless of the lowered level of attention to it.

To explain this paradox, we note that attention reflects both involvement, which is a positive aspect of attention, and processing difficulty, which is a negative aspect of attention. Consistent with the proposed mechanism, we find that the *time* for attribute level evaluation, a proxy for the *ease* of attribute level evaluation, mediates the effect of the choice of sorting attribute on the weight of the less evaluable attribute. When options get sorted on the less evaluable attribute, attribute-level interpretation becomes easier. Not only can one readily infer the relative position of an attribute level in its distribution from option rank, but sorting also makes it easier to locate relevant targets of comparison. The most relevant targets of comparison presumably are those attribute levels that differ least from a given attribute level. When the levels are sorted, these levels match with adjacent options and are easy to locate. However, when the levels are not sorted, people must scan several attribute levels before locating the most relevant target. This process likely demands that people keep various levels in working memory; this should be associated with increased processing difficulty.

GENERAL DISCUSSION

Consumers are confronted with hierarchically sorted multi-option, multi-attribute tables. With this research, we focus on an important aspect of such tables: the choice of attribute on which the options are primarily sorted. We propose that the choice of sorting attribute influences consumers' judgments by influencing the ease by which attribute levels can be evaluated. Consistent findings across three studies support this ease-of-evaluation explanation. Study 1 demonstrates that sorting options on a certain attribute increases this attribute's weight in consumers' product evaluation and, hence, the perceived attractiveness of the options that score favorably on this attribute. This, however, only applies for less evaluable attributes, for which consumers lack access to relevant knowledge and must rely on presented attribute levels to evaluate any given level. Study 2 further supports the idea of the ease-of-evaluation theory, by showing that the sorting effect disappears when the evaluation of presented attributes is facilitated, irrespective of the sorting attribute choice. When attribute levels are easy to evaluate, as with the assistance of color coding, sorting the options on any particular attribute does not significantly improve the ease of processing. Hence the attribute level evaluations of neither more nor less evaluable attributes are affected by the choice of the sorting attribute. Finally, Study 3 investigated eye movements as decision makers rate options presented in a multi-option, multi-attribute table. Sorting options on a less evaluable attribute decreases the time needed to process attribute level information, providing additional evidence in support of the ease-of-evaluation mechanism. This decrease in time needed to evaluate a given attribute level mediated the effect of choice of sorting attribute on the weight of this attribute in consumers' evaluations.

It is important to eliminate two potential sources of confusion. First, the extent to which

an attribute is evaluable is a critical moderator of the sorting effect. However, various sources of evaluability exist (Hsee & Zhang, 2010). In our research, our evaluable attributes are monetary (wages, subscription cost). One may argue that these attributes are inevaluable because people lack an innate reference system to evaluate money and wealth. While we agree with this idea, at the same time we believe that the wages and costs in our research are to some extent evaluable because consumers do have some idea what money can buy. For instance, consumers can readily imagine how much more they could buy with 50 Euro compared to 20 Euro, and hence what the opportunity cost would be of a more expensive Internet subscription. Similarly, while people may not know what the average starting wage is, they do have some idea how much more a net monthly wage of 2000 Euro can buy compared to 1500 Euro a month. As our pretests show, people do lack similar intuitions about download speed and commuting time. However, with increasing exposure to different attribute levels, consumers gain experience in evaluating the attribute (Hsee & Zhang, 2010).

Second, we claim that the weight of an attribute is affected by the extent to which consumers try to use information regarding that attribute. This is a cognitive process rather than a metacognitive one. Our research does not show that an attribute receives more weight when options are sorted according to it because associated feelings of processing fluency affect decision-making. We merely claim that the ease of using information increases the probability that people use the information. At the same time, however, we also do not exclude the possibility that metacognitive feelings of processing fluency may affect processing weights, in addition to the increased information use that results from a more convenient sorting. As such, both cognitive and metacognitive process may jointly affect attribute weights, but we leave the examination of this possibility to future research.

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Another mechanism that may operate when consumers are confronted with sortings can be derived from the theory of conversational logic (Grice, 1975). According to this theory, the exchange of information constitutes a collaboration between a speaker and a listener (Grice, 1975). This collaboration implies that the speaker is truthful (quality maxim), provides relevant information (relation maxim), presents his/her ideas in an understandable way (manner maxim), and offers neither more nor less information than required by the situation (quantity maxim). People rely on such maxims not only during everyday conversations but also to make sense of any information exchange (Schwarz, 1994; Zhang & Schwarz, 2012), especially when no physical information provider is present. As such, when confronted with information in a multi-option multi-attribute table, consumers may draw on conversational norms to infer that the choice of the sorting attribute is not arbitrary, but rather conveys some information about its relevance or importance for the consumers' decision, relative to attributes on which the options are not primarily sorted (Häubl & Murray, 2003). In turn, they may focus on this attribute, making it more important in determining the attractiveness of the choice options.

While this conversational logic mechanism would also imply an increased influence of the sorting attribute, our results provide some evidence against it. First, a conversational logic mechanism would not predict that attribute evaluability moderates the sorting effect (Study 1). Instead, the weight of both attributes should be affected by the sorting. Second, it cannot explain why the sorting effect disappears under facilitated attribute-level evaluation (Study 2). Finally, a conversational norms mechanism would predict that people spend most of their time looking at the sorted attribute and not at the unsorted attribute while we find the opposite pattern (Study 3). Overall, our results discredit a conversational logic account.

Theoretical and Practical Contributions

Our findings offer several contributions to the existing literature and practice. First, we contribute to the very limited research stream showing that sorting options according to a particular attribute renders that attribute more important in consumers' decisions (Cai & Xu, 2008; Russo, 1977). We expand this research by focusing on the effect of choice of sorting attribute on product evaluation and offering an explanation for its underlying process. We demonstrate that sorting options on one particular attribute increases the ease with which decision makers can process and interpret the individual levels of this attribute. Hence, the cognitive costs of using this attribute in one's product evaluation decreases, which translates into an effect on consumers' evaluations.

Second, by establishing a boundary condition of attribute evaluability, we offer the first evidence that the sorting effect is limited to those attributes for which consumers cannot rely on their existing knowledge about attribute-level distributions. This finding is consistent with general evaluability theory, which states that comparing attribute levels across different options only affects hard-to-evaluate attributes (Hsee & Zhang, 2010). Easy-to-evaluate attributes can be evaluated with relative ease, but attributes for which people have no innate reference system or previous knowledge ultimately have a greater impact when evaluated jointly. In a joint evaluation, people can compare attribute levels across different options to assess how good the given attribute level is (Hsee, 1996; Hsee & Zhang, 2010). In our case, we demonstrate that sorting attribute levels to facilitate comparisons between individual attribute levels increases the weight of less evaluable attributes on consumers' decisions. In contrast, when people possess previous knowledge about an attribute, sorting options on this attribute has no effect on its

weight.

Third, though not the primary focus of this research, the eye movement results are consistent with previous research on the relationship between attention and attribute importance. MacKenzie (1986) illustrated that the amount of attention devoted to attributes in an ad increases the importance of these attributes in decisions. Moreover, eye movement studies have illustrated a positive relationship between attention and outcomes such as the liking of ads and product choice likelihood (Krajbich, Armel, & Rangel, 2010; Maughan, Gutnikov, & Stevens, 2007; Atalay, Bodur, & Rasolofoarison, 2012). Our third study uses eye movement data to document the positive relationship between attention and the weight of attributes. Moreover, we show that visual attention does not always have a positive connotation. Our findings suggest that less evaluable attributes receive more attention when they are unsorted – which presumably means they need more intensive processing. Inferring involvement and interest (i.e., positive qualities) from visual attention thus may be less straightforward than is sometimes assumed when the available information differs in its ease of processing. In this case, visual attention may reflect the negative quality of processing difficulty. This finding is consistent with previous research that demonstrated that stimuli receive more attention when they are more difficult to perceive or process (Goldberg & Kotval, 1999; Stewart, Pickering, & Sturt, 2004; White & Staub, 2012). This dual connotation of visual attention also helps to explain the paradox why the choice of sorting attribute can both decrease attention to an attribute but simultaneously increase its weight in decision-making.

In addition to these theoretical contributions, this research has several managerial implications for choice environments. Multi-option multi-attribute tables are a common information display design, which is used on many websites. The effect of these tables on

consumers' decisions and the relative importance of the included attributes might have special relevance for managers interested in understanding and perhaps influencing their consumers' information environment, as it relates to purchase decisions. Similar to previous research on recommendation agents (Häubl & Murray, 2003), we find that rankings have great potential for systematically affecting consumer behavior.

In this sense, a more thorough understanding of the underlying process and role of attribute evaluability might be especially interesting. Sorting options on less evaluable attributes can help increase their role in consumers' decisions. In contrast, the choice of sorting attribute leaves the weight of easy-to-evaluate attributes unchanged or even decreases their weight. Our results indicate that sorting options according to price information, which is often easy-to-evaluate, is unlikely to increase consumers' price sensitivity. Companies can benefit from sorting options on less evaluable attributes though, because their increased influence may justify higher prices.

Directions for further research

A number of questions remain for future research. First, we included only two attributes in our study. Although our use of a limited set of attributes made it easier to demonstrate the sorting effect and its underlying process, further research should investigate the influences on the sorting effect and the underlying mechanisms in a context that involves more than two attributes. Including additional attributes could shift their relative importance, simply because of their inclusion into the evaluation process (Aksoy, Bloom, Lurie, & Cooil, 2006). Additional attributes also could induce perceptions of information overload that might influence consumers'

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decisions. The increased difficulty of processing multiple attributes may even strengthen the effect of choice of sorting attribute.

Second, while we show that the evaluation of hard-to-evaluate attributes can be made easier through the use of colors, one may wonder whether it is possible to make the evaluation of easy-to-evaluate attributes harder. We believe it is. Evaluation of the easy-to-evaluate attributes still requires consumers to retrieve information from long-term memory and process that information in working memory. Any process that interferes with retrieval and processing is likely to increase the difficulty to interpret levels of easy-to-evaluate attributes. For instance, distraction and cognitive load may suffice to make attributes (that are not inherently evaluable) more difficult to evaluate, and consequently, under those circumstances sorting effects may also ensue for easy-to-evaluate attributes.

Moreover, while the weight of the hard-to-evaluate attributes increases when options are sorted on them, our results show that sorting options on the hard-to-evaluate attribute can sometimes also increase the weight of the easy-to-evaluate attribute. In Study 3 we illustrate that the weight of the cost information is higher when the options were not sorted on this attribute. A possible explanation might be found in cognitive resources of the consumer. When the options are not sorted on the hard-to-evaluate attribute, people might need more effort to process this information. Hence, they might have fewer resources left to consider the easy-to-evaluate attribute. In contrast, when sorted on the hard-to-evaluated attribute, this information becomes easier to process and people might have more resources to process the easy-to-evaluate attribute. Further research could examine the underlying reasons for this effect.

Another avenue for research would be to consider consumers' ability to interpret and compare quantitative attribute information. Some consumers are better able to process numerical

information than others (Peters et al., 2006). Highly numerate people might be able to process attribute information more readily, even when unsorted. Consequently, highly numerate people actually might be less likely to exhibit a sorting effect than less numerate people.

Further, while we employed uncorrelated attributes, future studies could also evaluate how the choice of sorting attribute affects decision weights for correlated attributes. Moreover, future research could also investigate situations when the sorting attribute is displayed on different positions. According to our mechanism, this should have no effect on the results. In addition, while the information was always numeric, sometimes quantitative information is represented visually (e.g., a number of dollar signs, or a number of stars). Possibly, visual representation of quantitative information renders attribute level evaluation easier, which then should decrease the sorting effect. Finally, while we presented participants with one fixed sorting, future research could also investigate what happens when consumers are able to change the choice of sorting attribute, as in many online search tools.

Conclusion

This article sheds light on an under-researched, yet highly important topic. Multi-option multi-attribute tables play an important role in various choice situations and have become a ubiquitous decision tool for customers. Yet extant literature on how sorting affects decision-making in such tables is very limited. By focusing on the choice of attribute for sorting the options, this article offers an explanation for how a product table that is based on a particular attribute might influence consumers' product evaluations. The choice of sorting attributes renders the interpretation of attribute levels easier. Less evaluable attributes, whose levels are

easier to compare when sorted, thus become more influential, as reflected in consumers' product

evaluation.

REFERENCES

Aksoy, L., Bloom, P. N., Lurie, N. H., & Cooil, B. (2006). Should recommendation agents think like people?. *Journal of Service Research*, *8(4)*, 297-315.

Atalay, A. S., Bodur, H. O., & Rasolofoarison, D. (2012). Shining in the center: Central gaze cascade effect on product choice. *Journal of Consumer Research*, *39(4)*, 848-866.

Bettman, J. R., & Kakkar, P. (1977). Effects of information presentation format on consumer information acquisition strategies. *Journal of Consumer Research, 3 (4)*, 233-240.

Bettman, J. R., Luce, M. F., & Payne, J. W. (1998). Constructive consumer choice processes. *Journal of Consumer Research, 25(3),* 187–217.

Cai, S., & Xu, Y. (2008). Designing product lists for e-commerce: The effects of sorting on consumer decision making. *Intl. Journal of Human–Computer Interaction*, *24(7)*, 700-721.

Dhar, R., & Simonson, I. (1992). The effect of the focus of comparison on consumer preferences. *Journal of Marketing Research, 29(4)*, 430-440.

Diehl, K., Kornish, L. J., & Lynch Jr, J. G. (2003). Smart agents: When lower search costs for quality information increase price sensitivity. *Journal of Consumer Research*, *30(1)*, 56-71

Diehl, K., & Zauberman, G. (2005). Searching ordered sets: evaluations from sequences under search. *Journal of Consumer Research*, *31(4)*, 824-832.

Galesic, M., Tourangeau, R., Couper, M. P., & Conrad, F. G. (2008). Eye-tracking data new insights on response order effects and other cognitive shortcuts in survey responding. *Public Opinion Quarterly*, *72(5)*, 892-913.

Glaholt, M. G., & Reingold, E. M. (2011). Eye movement monitoring as a process tracing methodology in decision making research. *Journal of Neuroscience, Psychology, and*

Economics, *4(2)*, 125-146.

Goldberg, J. H., & Kotval, X. P. (1999). Computer interface evaluation using eye movements: methods and constructs. *International Journal of Industrial Ergonomics*, *24(6)*, 631-645.

Grice, H. P. (1975). Logic and conversation. In *Syntax and Semantics*, Vol. 3, ed. P. Cole and J. L. Morgan. New York: Academic Press, 41-58.

Harte, J. M., & Koele, P. (1995). A comparison of different methods for the elicitation of attribute weights: structural modeling, process tracing, and self-reports. *Organizational Behavior and Human Decision Processes*, *64(1)*, 49-64.

Häubl, G., & Murray, K. (2003). Preference construction and persistence in digital marketplaces: The role of electronic recommendation agents. *Journal of Consumer Psychology, 13(1-2),* 75-91.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: Guilford Press.

Hsee, C. K. (1996). The evaluability hypothesis: An explanation for preference reversals between joint and separate evaluations of alternatives. *Organizational Behavior and Human Decision Processes*, *67(3)*, 247-257.

Hsee, C. K., & Zhang, J. (2010). General evaluability theory. *Perspectives on Psychological Science*, *5(4)*, 343-355.

Jarvenpaa, S. L. (1990). Graphic displays in decision making—the visual salience effect. *Journal of Behavioral Decision Making, 3(4),* 247–262.

Johnson, E. J., & Payne, J. W. (1985). Effort and accuracy in choice. *Management Science 31(4)*, 395-414.

Kleinmuntz, D. N., & Schkade, D. A. (1993). Information displays and decision processes. *Psychological Science*, *4(4),* 221-227.

Krajbich, I., Armel, C., & Rangel, A. (2010). Visual fixations and the computation and comparison of value in simple choice. *Nature Neuroscience*, *13(10)*, 1292-1298.

Litell, R. C., Stroup, W. W., & Freund, R. J. (2002). *SAS for linear models.* Cary, NC: SAS Institute.

Luce, M. F., Bettman, J. R., & Payne, J. W. (2000). Attribute identities matter: subjective perceptions of attribute characteristics. *Marketing Letters, 11(2),* 103-116.

Lurie, N. H., & Mason, C. H. (2007). Visual representation: Implications for Decision making. *Journal of Marketing*, *71(1),* 160-177.

MacKenzie, S. B. (1986). The role of attention in mediating the effect of advertising on attribute importance. *Journal of Consumer Research*, *13(2),* 174–193.

Maughan, L., Gutnikov, S., & Stevens, R. (2007). Like more, look more. look more, like more: the evidence from eye-tracking. *Journal of Brand Management, 14(4),* 335-342.

Payne, J. W. (1982).Contingent decision behavior. *Psychological Bulletin*, *92(2),* 382-402.

Payne, J. W., Bettman, J. R., & Schkade, D. (1999). Measuring constructed preferences: Towards a building code. *Journal of Risk and Uncertainty, 19(1-3),* 243–271.

Peters, E., Västfjäll, D., Slovic, P., Mertz, C. K., Mazzocco, K., & Dickert, S. (2006). Numeracy and decision making. *Psychological Science*, *17(5)*, 407-413.

Pieters, R., Rosbergen, E., & Wedel, M. (1999). Visual attention to repeated print advertising: A test of scanpath theory. *Journal of Marketing Research*, *36(4),* 424-438.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods*, *36(4),* 717-731.

Rayner, K. (1998). Eye movements in reading and information processing: 20 years of research. *Psychological bulletin*, *124(3)*, 372-422.

Russo, J. E. (1977). The value of unit price information. *Journal of Marketing Research*, *14(2)*, 193-201.

Russo, J. E. (2011). Eye fixations as a process trace. in *A handbook of Process Tracing Methods for Decision Research*, Michael Schulte-Mecklenbeck, Anton Kuehberger, Rob Ranyard, eds. Psychology Press, 43-64.

Russo, J. E., Staelin, R., Nolan, C. A., Russell, G. J., & Metcalf, B. L. (1986). Nutrition information in the supermarket. *Journal of Consumer Research*, *13(1),* 48-70.

Schwartz, N. (1994). Judgment in a social context: Biases, shortcomings, and the logic of conversation. *Advances in Experimental Social Psychology*, *26*, 123-162.

Simonson, I., Bettman, J. R., Kramer, T., & Payne, J. W. (2013). Comparison selection: An approach to the study of consumer judgment and choice. *Journal of Consumer Psychology*, *23*, 137-149.

Schwarz, N. (1994). Judgment in a social context: Biases, shortcomings, and the logic of conversation. in *Advances in Experimental Social Psychology*, Vol. 26, ed. M. P. Zanna. San Diego, CA: Academic Press, 123–162.

Simonson, I., Bettman, J. R., Kramer, T., & Payne, J. W. (2013). Comparison selection: An approach to the study of consumer judgment and choice. *Journal of Consumer Psychology, 23(1),* 137-149.

Slovic, P. (1995). The construction of preference. *American Psychologist*, 50, 364–371.

Slovic, P., & MacPhillamy, D. (1974). Dimensional commensurability and cue utilization in comparative choice. *Organizational Behavior and Human Performance*, *11(2),* 179-194.

Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis. An introduction to basic and advanced multilevel modeling*. London: Sage Publications.

Stewart, N., Chater, N., & Brown, G. D. A. (2006). Decision by sampling. *Cognitive Psychology*, *53(1),* 1-26.

Stewart, A. J., Pickering, M. J., & Sturt, P. (2004). Using eye movements during reading as an implicit measure of the acceptability of brand extensions. *Applied Cognitive Psychology*, *18(6),* 697-709.

Suk, K., Lee, J., & Lichtenstein, D. R. (2012). The influence of price presentation order on consumer choice. *Journal of Marketing Research, 49(5),* 708-717.

Teixeira, T., Wedel, M., & Pieters, R. (2012). Emotion-induced engagement in internet video advertisments. *Journal of Marketing Research, 49(2),* 144-159.

Urbany, J. E. (1986). An experimental examination of the economics of information. *Journal of Consumer Research*, *13(2)*, 257-271.

Van Ittersum, K., Pennings, J. M. E., Wansink, B., & Van Trijp, H. C. M. (2007). The validity of attribute-importance measurement: A review. *Journal of Business Research*, *60(11)*, 1177-1190.

Velichkovsky, B. M. (2002). Heterarchy of cognition: The depths and the highs of a framework for memory research. *Memory, 10(5/6),* 405-419.

Viswanathan, M., & Narayanan, S. (1994). Comparative judgments of numerical and verbal attribute labels. *Journal of Consumer Psychology*, *3(1),* 79-101.

Westenberg, M. R. M., & Koele, P. (1994). Multi-attribute evaluation processes: methodological and conceptual issues. *Acta Psychologica, 18(2-3),* 65-84.

White, S. J., & Staub, A. (2012). The distribution of fixation durations during reading: effects of

stimulus quality. *Journal of Experimental Psychology: Human Perception and Performance, 38(3),* 603-617.

Woltman-Elpers, J. L. C. M., Wedel, M., & Pieters, R. (2003). Why do consumers stop viewing television commercials? Two Experiments on the Influence of Moment-to-Moment Entertainment and Information Value. *Journal of Marketing Research*, *40(4)*, 437-453.

Zhang, Y. C., & Schwarz, N. (2012). How and why one year differs from 365 days: A conversational logic analysis of inferences from the granularity of quantitative expressions. *Journal of Consumer Research*, *39(2)*, 248-259.

Appendix 1: Overview of the defined areas of interest (AOI) and the used eye tracking indicators (Study 3)

1	Internet plan E	$ 10,-	24 MBps			1	Internet plan E	$ 10,-	24 MBps		
2	Internet plan H	$ 10,-	9 MBps			2	Internet plan H	$ 10,-	9 MBps		
3	Internet plan C	$ 15,-	12 MBps			3	Internet plan C	$ 15,-	12 MBps		
4	Internet plan I	$ 20,-	15 MBps			4	Internet plan I	$ 20,-	15 MBps		
5	Internet plan A	$ 30,-	27 MBps			5	Internet plan A	$ 30,-	27 MBps		
6	Internet plan G	$ 30,-	30 MBps			6	Internet plan G	$ 30,-	30 MBps		
7	Internet plan D	$ 40,-	4 MBps			7	Internet plan D	$ 40,-	4 MBps		
8	Internet plan J	$ 45,-	21 MBps			8	Internet plan J	$ 45,-	21 MBps		
9	Internet plan B	$ 50,-	18 MBps			9	Internet plan B	$ 50,-	18 MBps		
10	Internet plan F	$ 60,-	15 MBps			10	Internet plan F	$ 60,-	15 MBps		

A) AOI's around each attribute   **B) AOI's around each attribute level**

Eye-movement indicator	Description
Fixation duration	- Attention towards the two included attributes - Sum of all the times (in seconds) a participant looks to a particular attribute (i.e., subscription costs or download speed) - Use of the AOI's around each attribute (A)
Number of transitions	- Proxy for the number of comparisons between levels of the same attribute (i.e., within subscription costs or download speed) - Sum of times a respondent switches from one level of an attribute to another level of the same attribute - Use of the AOI's around each attribute level (A)

Eye-movement indicator	Description
Attention per fixation	- Average time needed to evaluate individual attribute levels - The total attention towards an attribute (i.e., either subscription costs or download speed) divided by the number of fixations on a level of this attribute - Use of both the AOI's around each attribute and around each atrtribute level (A & B)

CHAPTER V:

CONCLUSIONS, CONTRIBUTIONS & FUTURE RESEARCH

CHAPTER V: CONCLUSIONS, CONTRIBUTIONS AND FUTURE RESEARCH

T he goal of this dissertation is to improve our understanding how consumers use information when making decisions by looking at how people evaluate the value of online reviews and how they use multi-option multi-attribute lists when making choice decisions. This final chapter is organized as such. First, we summarize the findings of each essay. Then, we discuss the theoretical and managerial implications of the essays. Finally, we discuss the limitations of our research and shed light on directions for future research.

RECAPITULATION OF FINDINGS

The first two essays of this doctoral dissertation investigated factors that affect consumers' judgment of online review value. Chapter II focused on the use of similarity cues to determine review helpfulness. Online reviews are more likely to be perceived as helpful when consumers believe the reviews are consistent with their preferences and expectations. Chapter II provided direct evidence that the type of product - utilitarian versus hedonic– influences consumers' inferences about reviewer similarity. Using both experimental and secondary data, we demonstrated that online reviews for utilitarian goods are perceived as more helpful than reviews for hedonic goods (studies 1 and 2) due to higher perceived similarity to the reviewer of utilitarian good (study 3). Specifically, consumers believe that the evaluation of utilitarian goods is a matter of opinion, which depends on seemingly objective criteria. In contrast, the quality of hedonic goods is seen as a question of taste, which is highly subjective. Because of the relatively more objective nature of opinions, people believe that there is a higher chance that the reviewer

has the same expectations about the product, which connotes a higher similarity towards the reviewer. Higher similarity, in turn, is translated into higher review helpfulness.

Chapter III focused on another factor that affects the perceived value of online reviews. This chapter investigated whether the consistency of a review's valence with that of other available reviews, rather than the review's valence alone, determines the perceived review value. Using data collected from Amazon.com and experiments, we showed that valence consistency affects review value. Specifically, positive reviews are on average evaluated as more helpful, because the majority of available online reviews are positive (i.e., exhibiting high consistency). Studies 2 and 3 showed that consistency increases review helpfulness by changing attributions. Consistent reviews are more readily attributed to product-relevant causes, while inconsistent reviews are attributed to factors that are specific to the reviewer. Finally, Study 3 also shows that this valence-consistency effect disappears for expert reviews, which are always highly helpful irrespective of the valence consistency. This occurs, because expert reviews are already highly attributed to the product.

Chapter IV focused on consumers' use of multi-option multi-attribute product lists to elaborate on the use of information for the evaluation of alternatives. Specifically, we demonstrated that the choice of the primary sorting attribute in multi-option multi-attribute lists influences consumers' judgments by influencing the ease by which attribute levels can be evaluated. Study 1 showed that sorting options on a particular attribute increases this attribute's weight in consumer's product evaluation. This sorting effect, however, is limited to hard-to-evaluate attributes. As consumers lack the relevant knowledge to interpret the levels of this attribute, values of this attribute are harder to process when unsorted. Study 2 and 3 provided evidence for the ease of evaluation as an underlying process. In Study 2, the sorting effect

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disappeared when a color coding makes attribute levels easy to compare, irrespective of the choice of sorting attribute. Using eye-movement data, Study 3 demonstrated that sorting options on a hard-to-evaluate attribute decreases the time needed to process attribute level information. This evaluation time mediates the effect of sorting on the weight of the less evaluable attribute.

THEORETICAL IMPLICATIONS

Three essays investigate consumers' use of information in their purchase decision process. We focus on two stages in this process: people often evaluate the provided information first, before they use information in their decision process. In their information evaluation attempts, consumers often make inferences based on available cues (e.g., Doh & Hwang 2009; Hu, Liu & Zhang, 2008, Mudambi & Schuff, 2010; Park & Lee, 2009; Schlosser, 2011; Zhu & Zhang, 2010). Chapters II and III of this dissertation contribute to this emerging stream of research by identifying novel variables that affect reviews value. Furthermore, we contribute more broadly to research looking at how consumer judge information value (Weiss, Lurie & MacInnis, 2008).

Chapter II identifies the type of the reviewed product as a similarity cue, contributing to the similarity literature. Previous research has suggested that the similarity between the preferences of the consumer and the information provider is a particularly relevant factor for the valuation of information (Gershoff, Broniarczyk & West, 2001; Naylor, Lamberton & Norton, 2011; Norton, Lamberton & Naylor 2013). Moreover, people can infer similarity by looking at the reviewer information (Hoch, 1988; Marks & Miller, 1987; Ross, Greene & House, 1977) or by cues in the content of the message (Gilbert & Malone, 1995). In contrast, the current research

argues that the difference between utilitarian and hedonic products is also used to make inferences about their similarity with the reviewer.

By investigating the underlying process of the relationship between product type and review helpfulness, Chapter II offers additional contributions. First, we offer an alternative explanation why online reviews might be more helpful for utilitarian products than for hedonic products (Cheema & Papatla, 2010). While previous research has argued that negative reviews for hedonic products are seen as less helpful than negative reviews for utilitarian products because of consumers' causal attribution (Sen & Lerman, 2007), the current research argues that reviews for utilitarian products are in general more helpful due to differences in perceived similarity. Second, we draw relationships between the literatures about hedonic and utilitarian products and about opinions and taste (Spears, Ellemers, & Doosje, 2009), offering another dimension to the product type distinction. We show that hedonic products are not only defined by their experiential character, but are also highly dependent on peoples' subjective taste. In contrast, utilitarian products are not only functional, but can also be judged by objective standards. Third, our findings further expand the literature on similarity by illustrating how the difference in inferences about quality (seen as a question of opinion or taste) affects consumers' inferences about the similarity of other consumers. In particular, other consumers of a product are seen as more similar when the quality of a product is a matter of opinion (vs. a question of taste). Opinions are more readily shared by others than highly subjective tastes, which conveys a notion of similarity.

This dissertation also contributes to the literature about the impact of information valence on the evaluation of online reviews. Traditionally, negative information has been argued to weight stronger on peoples' evaluations (e.g., Baumeister, Bratslavsky, Finkenauer, & Vohs,

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2001; Rozin & Royzman, 2001). In contrast, previous research on online reviews often suggested a positivity bias (Carlson & Guha, 2010; Pan & Zhang, 2011; Zhang, Craciun, & Shin, 2010). Chapter III contributes to this literature by arguing that the consistency of a review's valence with that of other reviews affects consumers' evaluation of the review, rather than the review valence alone. Valence consistency influences consumers' causal attributions, with consistent reviews being attributed more readily to product-relevant factors, which makes a review more helpful.

Moreover, Chapter III broadens our understanding of the role of expert reviews. Reviews written by credible reviewers (i.e., experts) are seen as more useful and trustworthy (e.g., Eastin, 2001; Eagly and Chaiken, 1993; Willemsen, Neijens, Bronner, & de Ridder, 2011). Our findings suggest that expert reviews are on average perceived as more helpful, because they are more readily attributed to the actual product quality. This has two important implications. First, expert reviews will continue to be helpful, even when the review is inconsistent with other reviews. Second, interestingly our results also suggest that in a consistent context, expert reviews might be equally helpful than normal reviews. With a high valence consistency, both reviews are likely to be attributed to the product.

Chapter IV focuses on the use of information for product evaluation and demonstrates how people use information presented in product lists for evaluating alternatives. This chapter also offers interesting theoretical contributions. First, our research provides insights into the underlying process of the effect of product lists on consumers' judgments. Previous research has argued that the context in which information is presented has important implications for the way information is used in decisions (e.g., Bettman & Kakkar, 1977; Bettman, Luce, & Payne, 1998; Bettman, Payne, & Staelin, 1986; Lurie & Mason, 2007). As such, it has been suggested that

sorting options according to a particular attribute renders this attribute more important in consumers' decisions (Cai & Xu, 2008; Russo, 1977). This research contributes to the literature by demonstrating that sorting options on one particular attribute makes this attribute easier to process and to interpret. Consequently, this attribute will become more accessible (Higgins, 1996), which increases the weight in consumers' product evaluation. Moreover, the results show that the sorting effect is limited to attributes that are hard-to-evaluate (Hsee & Zhang, 2010). Easily evaluable attributes can be understood with relative ease and are therefore readily accessible for consumers, even when unsorted.

Finally, this chapter also contributes to the understanding of the use of information in product evaluations on a methodological level. We used eye-movement data to show how much attention people pay to the presented information, which is used as a proxy for the evaluation ease (Rayner, 1998). The eye-movement data showed that an increase in attention does not necessarily has to have positive consequences, such as increased liking or choice likelihood (Atalay, Bodur, & Rasolofoarison, 2012; Krajbich, Armel, & Rangel, 2010). Instead, it indicated a decrease in the use of an attribute in consumers' product evaluations.

PRACTICAL IMPLICATIONS

In addition to these theoretical contributions, the findings of this dissertation also offer valuable contributions for practitioners. The results of Chapter II and Chapter III can help both marketers and consumer with providing reviews that others find helpful. First, the results of Chapter II show that while online reviews are common for both utilitarian and hedonic products, they are likely to differ in their perceived helpfulness. However, knowing that this difference is

driven by similarity inferences, marketers and consumers can use different similarity cues to boost the helpfulness of the reviews. Our findings suggest that personalization might be one way to increase similarity. Websites could benefit from recommendation systems that assess consumers' preferences (e.g., based on prior shopping behavior or on customer profiles) and provide reviews written by consumers with similar preferences. Reviewers can also increase the likelihood that the reviews they write are perceived as helpful by providing similarity cues themselves. For example, they could talk about other products they like or make clear what they are looking for in the product.

Second, marketers are often concerned about the impact of negative reviews. The results of Chapter III show that the impact of negative information might be weaker than expected in a context where most reviews are positive (for example on Amazon.com). Moreover, the perceived value of negative reviews can be managed by the way reviews are presented. The effect of negative reviews can be attentuated by presenting them surrounded by positive reviews. Similarly, reviewers should consider the consistency of their review with the existing set of reviews when they are concerned with how their review will be perceived.

The findings also stress the importance of expert reviews. Expert reviews can withstand the impact of conflicting reviews on consumers' evaluations. As such, they might be especially interesting to warrant the helpfulness of positive reviews for products that have gotten mixed or negative reviews. Drawing attention to a positive review for a product with mostly negative reviews, could help against the strong impact of these negative reviews. This also means that reviewers should display their product expertise when reviewing a product.

Finally, the findings of Chapter IV also offer practical implications. Multi-option multi-attribute tables are a popular decision aid and it might be of importance for practitioners to

understand how the presentation of information affects consumers' decision. Our findings suggest that sorting options on less evaluable attributes can help increase their importance in consumers' product evaluations. In contrast, the choice of sorting attribute leaves the weight of easily evaluable attributes unchanged or even decreases their weight. This might be especially relevant when product lists include price information, which is often easier to evaluate. Consequently, sorting options on price is unlikely to affect price sensitivity, while sorting information on other attributes might increase their importance.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

While we offer several valuable findings in our three chapters, we leave a number of interesting questions for future research. Below, we will first discuss limitations of the current research and make suggestions for future research.

First, while the current research has yielded important insights into variables that affect review value, it has not looked at the written content of the reviews. Consumers, however, often read the text of online reviews, rather than relying solely on cues, such as the product type (Schlosser, 2011). As such, one possibility is that review content could moderate the relationship between product type and review helpfulness (Chapter II). For example, utilitarian and hedonic products relate to different product needs, which may translate into different review content. While we have written our reviews in a way that include both hedonic and utilitarian aspects, reviews for hedonic goods might be generally more reflective of hedonic needs. Also, the content of a review might include additional similarity cues, attenuating the difference in helpfulness between hedonic and utilitarian products. In contrast, reviews for utilitarian reviews could

include information, such as different usage situations, that make the reader feel less similar to the reviewer.

Further studies could also look into the role of processing variables that could affect the evaluation of information. One possibility is that consumers' processing style could affect the valence consistency effect (Chapter III). For example, when people are induced to process the review analytically rather than holistically, the valence consistency effect might be attenuated. Analytical processing makes people focus more on the individual characteristics of a review and less on the context in which the review is situated. Hence, a review might be more evaluated based on its content, and to a lesser extent on its consistency with other reviews.

Personality variables may also moderate valence consistency effect. For example, consumers' evaluation of information could be affected by their regulatory focus. In particular, we might expect that the valence consistency effect is less pronounced for prevention-focused individuals, since they process information in a more analytical way (e.g., Forster & Higgins, 2005; Zhu & Meyers-Levy, 2007). In contrast, promotion-focused individuals approach information more holistically, which supports a focus on a review's context. Hence, a review's valence consistency might be important.

Moreover, the effect of product type on perceived similarity (Chapter II) might be attenuated by triggering a collective self versus an individual self (Brewer & Gardner, 1996). A collective self could increase the perceived similarity to reviewers of hedonic products, since people feel more similar to other people in general. In the same way, an individual self could decrease the perceived similarity to reviewers of utilitarian products.

Peoples' uniqueness motives might also affect the findings from Chapter II. Research on consumers' need for uniqueness suggests that those with a low need for uniqueness are more

likely to comply with a message that signals similarity than people with a high need for uniqueness who would entertain distinctiveness thoughts and behaviors (Irmak, Vallen, & Sen, 2010; Snyder & Fromkin, 1977). Consequently, signaling similarity only positively affects information helpfulness for consumers with a low need for uniqueness.

Future research could also pay attention to the use of information in product evaluation and to the influence of information presentation. Chapter IV demonstrates that how attribute information is presented in product lists influences the use of this information in product evaluation. To investigate this idea, the current studies used only product lists that present two uncorrelated attributes that are expressed in a numeric way. Consequently, future research could look into contexts that involve more than two attributes. The inclusion of additional attributes could shift the relative importance of the attributes and evoke feelings of information overload, which in turn could affect consumers' judgments. Similarly, Future research could also look into the effect of the choice of sorting attribute on the use of correlated attributes. Correlations between attribute values could evoke different evaluation strategies and, therefore affect judgments. Further, one might want to look into the use of visually presented attributes (e.g., dollar signs instead of prices; a star score instead of a numeric score). Visual information could facilitate the evaluability of the attribute, which should decrease the sorting effect.

The sorting effect might also be affected by peoples' numerosity (Peters et al., 2006). Highly numerate people might be able to process numerical attribute level information more readily, even when unsorted. Consequently, the sorting effect is less likely to occur for highly numerate people than for less numerate people.

Finally, our results indicated that sorting options on the easy-to-evaluate attribute sometimes decreases its weight. As such we have shown that subscription cost information is

less likely to be used, when being the primary sorting attribute. Future research should try to identify the causes of this effect. Since price information is often easily evaluable and consumers are likely to sort options on this information, it would be interesting to know in which situations sorting options on price information increases or decreases the consumers' price sensitivity.

Making decisions is an important aspect of our everyday life. For many decisions, we increasingly rely on different information sources. Across three chapters, we use online reviews and multi-option multi-attribute product lists to investigate how consumers evaluate the value of information and use information in their decision process, and show that a consumers' perceived similarity with a reviewer, the consistency of a review's valence with that of other reviews and the choice of the attribute on product lists is sorted on matters when making a decision. Therefore, our findings expand our understanding of the role of information in consumers' decision process.

REFERENCES

Atalay, A. S., Bodur, H. O., & Rasolofoarison, D. (2012). Shining in the center: Central gaze

    cascade effect on product choice. *Journal of Consumer Research*, *39(4)*, 848-866.

Baumeister, F., Bratslavsky, E., Finkenauer, C.; & Vohs, K. D. (2001). Bad is stronger than

    good. *Review of General Psychology, 5(4),* 323-370.

Bettman, J. R., & Kakkar, P. (1977). Effects of information presentation format on consumer

    information acquisition strategies. *Journal of Consumer Research, 3(4)*, 233-240.

Bettman, J. R., Luce, M. F., & Payne, J. W. (1998). Constructive consumer choice processes.

    Journal of consumer research, *25(3),* 187-217.

Bettman, J. R., Payne, J. W., & Staelin, R. (1986). Cognitive considerations in designing

    effective labels for presenting risk information. *Journal of Public Policy & Marketing, 5*, 1-

    28.

Brewer, M. B., & Gardner, W.. (1996). Who is this 'we'? Levels of collective identity and self

    representations. *Journal of Personality and Social Psychology, 71(1)*, 83–93.

Cai, S., & Xu, Y. (2008). Designing product lists for e-commerce: The effects of sorting on

    consumer decision making. *Intl. Journal of Human–Computer Interaction*, *24(7),* 700-721.

Carlson, K., & Guha, A. (2010). The ratings paradox: Why we prefer reading negative reviews,

    but then subsequently rate these reviews as less useful. *Advances in Consumer Research, 37*.

Cheema, A., & Papatla, P. (2010). relative importance of online versus offline information for

    internet purchases: Product category and internet experience Effects. *Journal of Business*

    Research, 63(9-10), 979-985.

Doh, S. J., & Hwang, J. S. (2009). How consumers evaluate eWOM (electronic word-of-mouth)

messages. *CyberPsychology & Behavior*, *12(2),* 193-197.

Eastin, M. S. (2001). Credibility assessments of online health information: The effects of source

expertise and knowledge of content. *Journal of Computer Mediated Communication, 6(4),*

0-0.

Eagly, Alice H., and Shelly Chaiken (1993), *The psychology of attitudes*," Harcourt Brace

Jovanovich College Publishers, 1993.

Forster, J., & Higgins, E. T. (2005). How global versus local perception fits regulatory focus.

Psychological Science, 16(8), 631-636.

Gershoff, A. D., Broniarczyk, S. M., & West, P. M. (2001). Recommendation or evaluation?

Task sensitivity in information source selection. *Journal of Consumer Research, 28(3),* 418-

438.

Gilbert, D. T., & Malone, P. S. (1995). The correspondance bias. *Psychological Bulletin*, *117(1)*,

21-38.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T.

Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp.

133–168). New York: Guilford Press.

Hsee, C. K., & Zhang, J. (2010). General evaluability theory. *Perspectives on Psychological*

Science, *5(4)*, 343-355.

Hoch, S. J. (1988). Who do we know? Predicting the interests and opinions of the american

consumer. *Journal of Consumer Research*, *15(3),* 315–324.

Hu, N., Liu, L., & Zhang, J. J. (2008). Do online reviews affect product sales? The role of

reviewer characteristics and temporal effects. *Information Technology and Management,*

9(3), 201-214.

Irmak, C., Vallen, B., & Sen, S. (2010). You like what I like, but I don't like what you like: Uniqueness motivations in product preferences. *Journal of Consumer Research, 37(3)*, 443-455.

Krajbich, I., Armel, C., & Rangel, A. (2010). Visual fixations and the computation and comparison of value in simple choice. *Nature Neuroscience*, *13(10)*, 1292-1298.

Lurie, N. H., & Mason, C. H. (2007). Visual representation: Implications for decision making. *Journal of Marketing, 71(1)*, 160-177.

Marks, G., & Miller, N. (1987). Ten years of research on the false-consensus effect: An empirical and theoretical review. *Psychological Bulletin*, *102(1),* 72–90.

Mudambi, S. M., & Schuff, D. (2010). What makes a helpful online review? A study of customer reviews on Amazon. com. *MIS Quarterly*, *34(1),* 185-200.

Naylor, R., Lamberton, C., & West, P. M. (2012). Beyond the "like" button: The impact of mere virtual presence on brand evaluations and purchase intentions in social media settings. *Journal of Marketing, 76(6),* 105-120.

Norton, D., Lamberton, C., & Naylor, R. (2013). The devil you (don't) know: Interpersonal ambiguity and inference making in competitive contexts. *Journal of Consumer Research*, *40(4),* in press.

Pan, Y., & Zhang, J. Q. (2011). Born unequal: A study of the helpfulness of user-generated product reviews. *Journal of Retailing, 87(4)*, 598-612.

Park, C., & Lee, T. M. (2009). Information direction, website reputation and eWOM effect: A moderating role of product type. *Journal of Business Research*, *62(1)*, 61-67.

Peters, E., Västfjäll, D., Slovic, P., Mertz, C. K., Mazzocco, K., & Dickert, S. (2006). Numeracy and decision making. *Psychological Science*, *17(5)*, 407-413.

Rayner, K. (1998). Eye movements in reading and information processing: 20 years of research. *Psychological Bulletin*, *124(3)*, 372-422.

Ross L., Greene, D., & House, P. (1977). The false consensus effect: An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology*, *13(3),* 279–301.

Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review, 5(4),* 296-320.

Russo, J. E. (1977). The value of unit price information. *Journal of Marketing Research, 14(2)*, 193-201.

Schlosser, A. E. (2011). Can including pros and cons increase the helpfulness and persuasiveness of online reviews? The interactive effects of ratings and arguments. *Journal of Consumer Psychology*, *21*(3), 226-239.

Sen, S., & Lerman, D. (2007). Why are you telling me this? An examination into negative consumer reviews on the web. *Journal of Interactive Marketing*, *21(4)*, 76-94.

Snyder C. R., & Fromkin, H. L. (1977), "Abnormality as a positive characteristic: The development and validation of a scale measuring need for uniqueness," *Journal of Abnormal Psychology*, 86(5), 518-527.

Spears, R., Ellemers, N., & Doosje, B. (2009). Strength in numbers or less is more? A Matter of opinion and a question of taste. *Personality and Social Psychology Bulletin*, *35(8)*, 1099-1111.

Weiss, A. M., Lurie, N. H., & MacInnis, D. J. (2008). Listening to strangers: whose responses are valuable, how valuable are they, and why?. *Journal of Marketing Research*, *45(4)*, 425-436.

Willemsen, L. M., Neijens, P. C., Bronner, F., & de Ridder, J. A. (2011). Highly recommended the content characteristics and perceived usefulness of online consumer reviews. *Journal of Computer-Mediated Communication*, *17(1)*, 19-38.

Zhang, J. Q., Craciun, G., & Shin, D. (2010). When does electronic word-of-mouth matter? A study of consumer product reviews. *Journal of Business Research*, *63(12),* 1336-1341.

Zhu, R. J., & Meyers-Levy, J. (2007). Exploring the cognitive mechanism that underlies regulatory focus effects. *Journal of Consumer Research, 34(1),* 89-96.

Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *Journal of Marketing*, *74(2),* 133-148.