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**The Dilemma of the Hedonic – Appreciated, but Hard to Justify.**

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# ABSTRACT

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Technical products have become more than practical tools to us. Mobile phones, for example, are a constant companion in daily life. Besides purely pragmatic tasks, they fulfill psychological needs such as relatedness, stimulation, competence, popularity, or security. Their potential for the mediation of positive experience makes interactive products a rich source of pleasure. Research acknowledged this: in parallel to the hedonic/utilitarian model in consumer research, Human-Computer Interaction (HCI) researchers broadened their focus from mere task-fulfillment (i.e., the *pragmatic*) to a holistic view, encompassing a product's ability for need-fulfillment and positive experience (i.e., the *hedonic*). Accordingly, many theoretical models of User Experience (UX) acknowledge both dimensions as equally important determinants of a product's appeal: pragmatic attributes (e.g., usability) as well as hedonic attributes (e.g., beauty). In choice situations, however, people often overemphasize the pragmatic, and fail to acknowledge the hedonic. This phenomenon may be explained by justification. Due to their need for justification, people attend to the justifiability of hedonic and pragmatic attributes rather than to their impact on experience. Given that pragmatic attributes directly contribute to task-fulfillment, they are far easier to justify than hedonic attributes. People may then choose the pragmatic over the hedonic, despite a *true* preference for the hedonic. This can be considered a dilemma, since people choose what is easy to justify and not what they enjoy the most. The present thesis presents a systematic exploration of the notion of a *hedonic dilemma* in the context of interactive products.

A first set of four studies explored the assumed phenomenon. Study 1 (N = 422) revealed a reluctance to pay for a hedonic attribute compared to a pragmatic attribute. Study 2 (N = 134) demonstrated that people (secretly) prefer a more hedonic product, but justify their choice by spurious pragmatic advantages. Study 3 (N = 118)

confronted participants with a trade-off between hedonic and pragmatic quality. Even though the prospect of receiving a hedonic product was related to more positive affect, participants predominantly chose the pragmatic, especially those with a high need for justification. This correlation between product choice and perceived need for justification lent further support to the notion that justification lies at the heart of the dilemma. Study 4 (N = 125) explored affective consequences and justifications provided for hedonic and pragmatic choice. Data on positive affect suggested a true preference for the hedonic—even among those who chose the pragmatic product.

A second set of three studies tested different ways to reduce the dilemma by manipulating justification. Manipulations referred to the *justifiability* of attributes as well as the general *need for justification*. Study 5 (N = 129) enhanced the respective justifiability of hedonic and pragmatic choice by ambiguous product information, which could be interpreted according to latent preferences. As expected, enhanced justifiability led to an increase in hedonic but not in pragmatic choice. Study 6 (N = 178) manipulated the justifiability of hedonic choice through product information provided by a "test report", which suggested hedonic attributes as legitimate. Again, hedonic choice increased with increased justifiability. Study 7 (N = 133) reduced the general need for justification by framing a purchase as gratification. A significant positive effect of the gratification frame on purchase rates occurred for a hedonic but not for a pragmatic product.

Altogether, the present studies revealed a desire for hedonic attributes, even in interactive products, which often are still understood as purely pragmatic "tools". But precisely because of this predominance of pragmatic quality, people may hesitate to give in to their desire for hedonic quality in interactive products—at least, as long as they feel a need for justification. The present findings provide an enhanced understanding of the complex consequences of hedonic and pragmatic attributes, and indicate a general necessity to expand the scope of User Experience research to the moment of product choice. Limitations of the present studies, implications for future research as well as practical implications for design and marketing are discussed.

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# ZUSAMMENFASSUNG

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Die Bedeutung technischer Produkte in unserem Alltag geht weit über die praktischer Werkzeuge hinaus. So ist beispielsweise das Mobiltelefon ein ständiger Begleiter, das neben rein pragmatischen Funktionen auch psychologische Bedürfnisse wie Verbundenheit, Stimulation, Kompetenz, Popularität oder Sicherheit erfüllt. Interaktive Produkte bieten somit ein großes Potential zur Vermittlung freudvoller Erlebnisse, was auch von der Forschung im Bereich Mensch-Technik-Interaktion (Human-Computer Interaction, HCI) anerkannt wurde. Neben aufgabenorientierten Qualitätsaspekten berücksichtigte die HCI-Forschung vermehrt auch Selbstorientierte, erlebnisbezogene Qualitätsaspekte. Diese Unterscheidung von *pragmatischen* Produktattributen (beispielsweise Usability, dt. Gebrauchstauglichkeit) und *hedonischen* Produktattributen (beispielsweise Schönheit) ist angelehnt an das Hedonisch-Utilitaristisch-Modell der Konsumentenpsychologie. Theoretische Modelle des Nutzererlebens (User Experience, UX) messen hedonischen und pragmatischen Attributen eine gleichermaßen wichtige Rolle für das Erleben und die Wertschätzung eines Produkts bei. Im Moment der Produktwahl kommt es jedoch oft zu einem Ungleichgewicht: hier werden vorrangig pragmatische Attribute berücksichtigt, wohingegen hedonische Attribute vernachlässigt werden. Dieses Phänomen lässt sich mit Rechtfertigung erklären. Personen haben das Bedürfnis ihre Wahl zu rechtfertigen und berücksichtigen so eher die Rechtfertigbarkeit von Produktattributen als deren Relevanz für die Freude am Produkt. Pragmatische Attribute sind hier im Vorteil. Durch ihren direkten Bezug zur primären Funktion eines Produkts lassen sie sich weitaus einfacher rechtfertigen als hedonische Attribute. Dies kann dazu führen, dass Personen entgegen ihrer eigentlichen (hedonischen) Präferenz pragmatisch wählen – was ein Dilemma darstellt, denn sie wählen nicht das, woran sie am meisten Freude haben. Die vorliegende Dissertation untersucht die Annahme eines *Dilemmas des Hedonischen* im Kontext interaktiver Produkte.

Eine erste Reihe von vier Studien bestätigte das angenommene Dilemma. Während Personen ohne Weiteres bereit waren, für einen Qualitätszuwachs bezüglich eines pragmatischen Attributs zu bezahlen, widerstrebte es ihnen, für einen Qualitätszuwachs bezüglich eines hedonischen Attributs zu bezahlen (Studie 1, N = 422). Studie 2 (N = 134) zeigte jedoch, dass Personen hedonische Produktattribute durchaus schätzen und ihre Wahl (insgeheim) auch daran orientieren. Sie begründen ihre Wahl aber vorrangig mit (durchaus fraglichen) pragmatischen Vorteilen. Studie 3 (N = 118) konfrontierte die Studienteilnehmer mit einer Wahl, die einen Kompromiss zwischen hedonischer und pragmatischer Qualität erforderte. Obgleich die Aussicht auf den Erhalt des hedonischen Produkts mit einem höheren Maß an positivem Affekt assoziiert wurde, wählte die Mehrheit der Teilnehmer das pragmatische Produkt, vor allem diejenigen mit einem hohen Rechtfertigungsbedürfnis. Der gefundene Zusammenhang zwischen Produktwahl und erlebtem Bedarf nach Rechtfertigung untermauerte die Annahme von Rechtfertigung als zugrundeliegenden Faktor. Studie 4 (N = 125) widmete sich der weiteren Exploration affektiver Konsequenzen sowie angeführten Begründungen für hedonische und pragmatische Wahl. Wieder war das hedonische Produkt mit einem höheren Maß an positivem Affekt assoziiert als das pragmatische – selbst unter denjenigen, die das pragmatische Produkt wählten.

Eine zweite Gruppe von drei Studien explorierte Möglichkeiten zur Reduktion des Dilemmas mittels experimenteller Manipulation von Rechtfertigung. Die getesteten Manipulationen setzten sowohl an der *Rechtfertigbarkeit* von Produktattributen als auch am generellen *Bedarf nach Rechtfertigung* an. Studie 5 (N = 129) erhöhte die jeweilige Rechtfertigbarkeit von hedonischer und pragmatischer Wahl mittels der Eindeutigkeit dargebotener Informationen über Produktattribute. Nicht eindeutige, "elastische" Informationen boten hier einen erhöhten Interpretationsspielraum, der zugunsten bestehender Präferenzen genutzt werden konnte. Erwartungsgemäß führte eine erhöhte Rechtfertigbarkeit zu einem Anstieg der Hedonisch-Wahlraten, die Pragmatisch-Wahlraten blieben von der Manipulation unbeeinflusst. Studie 6 (N = 178) erhöhte die Rechtfertigbarkeit einer hedonischen Wahl durch einen

"Testbericht", der hedonische Attribute als ein scheinbar legitimes Entscheidungskriterium anführte. Auch hier zeigte sich mit steigender Rechtfertigbarkeit ein Anstieg der Hedonisch-Wahlraten. Studie 7 (N = 133) manipulierte den generellen Bedarf nach Rechtfertigung durch ein Framing des Produktkaufs als Belohnung. Für ein hedonisches Produkt zeigte sich ein positiver Effekt des Belohnungs-Framings auf die Kaufbereitschaft, für ein pragmatisches Produkt zeigte sich hingegen kein Effekt der Rechtfertigungsmanipulation.

Die vorliegenden Studien zeigen auf, dass hedonische Attribute auch bei technischen Produkten geschätzt werden, wenngleich diese landläufig oft als "Werkzeuge" betrachtet werden. Genau diese noch immer weitverbreitete rein pragmatische Sichtweise auf Technik ist es womöglich, die Personen zögern lässt, ihrem Wunsch nach hedonischer Qualität nachzugeben – zumindest solange sie glauben, ihre Wahl rechtfertigen zu müssen. Die vorliegenden Ergebnisse tragen zu einem besseren Verständnis der komplexen Konsequenzen hedonischer und pragmatischer Attribute bei, und weisen auf eine generelle Notwendigkeit der Erweiterung des Fokus der User Experience-Forschung auf den Moment der Wahl hin. Limitationen der vorliegenden Studien, Implikationen für zukünftige Forschung, sowie praktische Implikationen für die Produktgestaltung und -vermarktung werden diskutiert.

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# 1. INTRODUCTION

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Interactive products have become constant companions in daily life and can be a rich source of positive experience. "Receiving a romantic text message by mobile phone" or "capturing the lively play of kitten by digital camera" are two of more than 500 examples of positive experiences with technology, collected in a recent study by Hassenzahl, Diefenbach and Göritz (2010). Although interactive products traditionally are considered as tools with given tasks (e.g., making a telephone call, taking a picture), the essential source of positive product experience is the fulfillment of psychological needs. A telephone call can fulfill relatedness needs when lonely or fulfill stimulation needs when bored. Taking photos can address different needs as well. It certainly addresses a need to preserve meaningful moments. Moreover, taking pictures can inspire a feeling of competence and popularity in the photographer, it can strengthen the feeling of relatedness to others, or it can just be stimulating and fun. In short, only the fulfillment of underlying needs makes a task such as "taking a picture" relevant to us. This distinction between tasks and underlying needs reveals two quality dimensions of interactive products, i.e., *pragmatic quality* and *hedonic quality*. Assessing a product's pragmatic quality calls for a focus on functionality and usability in relation to a potential task at hand; typical attributes are "clear", "controllable", "practical", "simple", or "useful" (e.g., Hassenzahl, 2003; Hassenzahl, Burmester, & Koller, 2003). In contrast, assessing a product's hedonic quality calls for a focus on the Self and its needs, that is, the question of why someone owns and uses a particular product; typical attributes are "captivating", "exciting", "interesting", "presentable", or "inviting" (e.g., Hassenzahl, 2003; Hassenzahl et al., 2003). Despite not being necessary for task fulfillment, a product's perceived hedonic quality is the main driver for positive experience (Hassenzahl et al., 2010).

Hedonic quality—or more broadly, positive experiences through fulfillment of human needs—can be understood as the ultimate benefit of using a product. But since this benefit often goes beyond bare necessity, it is more ephemeral and, thus, harder to justify than any pragmatic benefit of product use. Apart from the domain of interactive products, several authors already discussed these difficulties associated with hedonic attributes in choice situations. For example, consumer researchers argued that predominantly hedonic products are viewed as wasteful, and their acquisition is associated with luxury, indulgence, guilt, and non-rationalistic decision making (e.g., Hsee, Zhang, Yu, & Xi, 2003; Kivetz & Simonson, 2002; Prelec & Loewenstein, 1998; Strahilevitz & Myers, 1998). In the end, this ambivalent attitude toward hedonic attributes could even result in a choice against true preferences, i.e., not choosing what one enjoys the most. Okada (2005), for example, confronted people with a choice between a \$50 certificate for a dinner in a nice restaurant (i.e., a hedonic option) and a \$50 certificate for groceries from the supermarket around the corner (i.e., a pragmatic option). Although participants *rated* the dinner certificate to be more appealing, they predominantly *chose* the groceries certificate. These findings could be the consequence of a justification process. Driven by a general need for justification, people think about reasons for their choice. Even though they feel attracted by the hedonic, they have difficulties to envision plausible reasons for choice, since hedonic benefits are rather diffuse and hard to quantify. Accordingly, several authors reported a correlation between pragmatic choice and contextually induced need for justification (e.g., Böhm & Pfister, 1996; Kivetz & Simonson, 2002; O'Curry & Strahilevitz, 2001). To summarize, while hedonic quality is appealing, its potential consideration in choice falls well behind that of pragmatic quality. This is due to a felt need for justification and an asymmetry in the justifiability of hedonic and pragmatic attributes.

This imbalance may be even more pronounced in the domain of interactive products, due to the traditional focus on task-fulfillment. From this perspective, the importance of pragmatic attributes is self-evident, so that they typically do not require additional justification. In contrast, one cannot rely on the widely accepted notion of task-

fulfillment to justify hedonic attributes. Since they benefit "only" the Self, one needs to refer to personal needs and feelings, and the subjective pleasure derived from hedonic attributes. While this emphasizes their importance for experience, the seeming irrationality of hedonic attributes makes them more questionable as a reason for choice. Due to their lacking justifiability, they might not be considered as valid choice criteria. In the end, this could even lead to a choice against true preference, i.e., a *hedonic dilemma*.

In the domain of interactive products, this potential conflict between hedonic and pragmatic attributes and the resulting gap between choice and true preference has rarely been addressed. Most studies conducted in the field of Human-Computer Interaction (HCI) focused on the relevance of the hedonic for *experience* and outcome variables such as pleasure, satisfaction, or global product evaluation. Study results unanimously emphasized the importance of the hedonic for a product's overall appeal (e.g., Hassenzahl, 2001, 2003; van Schaik & Ling, 2008, 2011). However, few HCI researchers explored the relevance of the hedonic for *choice* (e.g., Tractinsky & Zmiri, 2006). This neglect is alarming for several reasons. First, a potential disregard of the hedonic does have even more severe consequences for durable, daily-used interactive products (e.g., mobile phones, computers) than for moving consumer goods, such as pencils and chocolate (Strahilevitz & Myers, 1998), or glue sticks and candy (Dhar & Wertenbroch, 2000). Besides a negative impact on product experience, the assumed hedonic dilemma may also lead to problems in user-research, product design, and marketing of interactive products (see Chapter 8.3). An expansion of the scope of HCI research on choice situations is thus essential.

The consumer research literature provides a rich foundation for the exploration of consequences of hedonic and pragmatic attributes in choice situations. However, it does not yet provide a coherent framework that could be readily applied to the domain of interactive products. Indeed, single studies already explored hedonic and pragmatic attributes of interactive products such as mobile phones and laptops (e.g., Chitturi, 2009; Chitturi, Raghunathan, & Mahajan, 2007, 2008). But the majority of research is

concerned with typical consumer articles such as food items or household supplies (see Chapter 2.1). Moreover, studies often explored choice between primarily hedonic and primarily pragmatic product *categories* (e.g., a bottle of wine versus a fuel voucher, see Kivetz & Simonson, 2002) rather than the situation of interest for HCI research, i.e., a choice between products of differing hedonic and pragmatic quality within one category (e.g., mobile phones). Finally, the assumption of justification as underlying factor still requires a systematic exploration. In previous studies, variations in participants' felt need for justification were often implicitly assumed (e.g., by studying public versus private choices, see Böhm & Pfister, 1996), but not validated by participants' reports on the choice process. Accordingly, an extensive exploration of the differential relation of justification to hedonic and pragmatic attributes of interactive products and its consequences for choice is still lacking.

The present thesis explores the existence of a hedonic dilemma in the domain of interactive products. Starting with a presentation of theoretical background of the suggested dilemma, Chapter 2 summarizes research on the hedonic/pragmatic model within the field of consumer psychology and HCI. It points out the parallels between research findings obtained within the two disciplines, particularly regarding the relevance of hedonic attributes for a products overall appeal. Chapter 3 discusses psychological mechanisms that may contribute to an asymmetry in the justifiability of hedonic and pragmatic attributes. It further reports preference shifts from hedonic to pragmatic which may be explained by differences in the contextually induced need for justification. Chapter 4 summarizes the theoretical foundation of the assumed dilemma in a conceptual model, derives main hypotheses, and presents a detailed outlook on empirical studies. The series of seven empirical studies is presented in two chapters. The first group of studies (Study 1 – Study 4, see Chapter 5) tested the core assumptions of the hedonic dilemma. The second group of studies (Study 5 – Study 7, see Chapter 6) tested derivations on how to reduce the dilemma by manipulating justification. Chapter 7 provides a general discussion of study findings, including practical implications and implications for future research. Altogether, the present

studies demonstrated the existence of a hedonic dilemma in the context of interactive products with justification as underlying factor, and, in addition, demonstrated strategies to alleviate the dilemma.

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## 2. HEDONIC AND PRAGMATIC ATTRIBUTES

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The hedonic/pragmatic model suggests a distinction between pragmatic, task-related attributes and hedonic, non-instrumental, experience-related attributes. The present chapter reports on the evolution of the hedonic/pragmatic model in two fields of research, i.e., consumer psychology (Chapter 2.1) and Human-Computer Interaction (Chapter 2.2). Regarding both disciplines, I first summarize how the hedonic/pragmatic model was introduced to the field, and then report on the respective relevance of hedonic and pragmatic attributes for product experience.

### **2.1. THE HEDONIC/UTILITARIAN MODEL IN CONSUMER RESEARCH**

#### *2.1.1. The Hedonic Approach*

An important starting point for the evolution of the hedonic/pragmatic model in the field of consumer research (here referred to as hedonic/utilitarian model) was the article by Hirschman and Holbrook (1982) on the hedonic approach, suggested as an extension of traditional consumer research. They declared the then dominating economic perspective and its focus on utility and hard attributes to be insufficient, since product use does not only fulfill utilitarian function but also emotional wants (Hirschman & Holbrook, 1982, p. 94). Besides the *utilitarian* dimension, a second, *hedonic* dimension should thus be taken into account. The hedonic dimension captures intangible and subjective product attributes, built on the emotive and fantasy aspects of one's experience with the product (Hirschman & Holbrook, 1982, p. 92). Fantasy, in their view, refers to self-constructed reality in accordance with one's ideal self, with the help of a product, e.g., Marlboro smokers who enjoy imagining themselves as the idealized cowboy. The quality derived from hedonic consumption is thus built on



what consumers desire reality to be (Hirschman & Holbrook, 1982, p. 94), i.e., how they want to be. This perspective is related to the distinction of do-goals (i.e., instrumental tasks) and be-goals (i.e., how people want to be), which was introduced by Carver and Scheier (1998) and then adopted in models of User Experience in HCI (e.g., Hassenzahl, 2003, 2010; see Chapter 2.2 for a broader discussion of do-goals and be-goals in the domain of interactive products).

### *2.1.1. Separating Hedonic and Utilitarian Quality Perceptions*

The hedonic approach by Hirschman and Holbrook (1982) also inspired other researchers. Many authors took up the distinction between a utilitarian, task-related and a hedonic, non-instrumental, experience-related quality dimension, and further developed the concept (e.g., Ahtola, 1985; Batra & Ahtola, 1990; Chandon, Wansink, & Laurent, 2000; Crowley, Spangenberg, & Hughes, 1992; Mano & Oliver 1993, O'Curry & Strahilevitz, 2001). The utilitarian dimension was described as being related to usefulness, functional or practical goals and benefits (e.g., Batra & Ahtola, 1990; Chandon et al., 2000), the necessary (e.g., O'Curry & Strahilevitz, 2001), or the cognitive (e.g., Chandon et al., 2000; Mano & Oliver, 1993). In contrast, the hedonic dimension was described as being related to the affective (e.g., Batra & Ahtola, 1990, Crowley et al., 1993; Mano & Oliver, 1993), the aesthetic (e.g. Batra & Ahtola, 1990; Mano & Oliver, 1993), sensual pleasure (e.g., Batra & Ahtola, 1990), the intrinsically pleasing (e.g., Mano & Oliver, 1993), entertainment and exploration (e.g., Chandon et al., 2000), but also the frivolous and decadent (O'Curry & Strahilevitz, 2001).

From a model-theoretic perspective, an important aspect is that the hedonic and the utilitarian do not form opposite poles but two independent dimensions, which both add to the global evaluation (i.e., judgments on a negative-positive or bad-good-dimension; see Ahtola, 1985). The empirical exploration of these model-theoretic assumptions called for the development of according measurement scales that reliably assess hedonic and utilitarian quality perceptions. Batra and Ahtola (1990) made a first suggestion for such a scale in the form of semantic differential items (e.g., "useful

– useless", "pleasant – unpleasant"). This built an important basis for future research and the development of further measurement scales (e.g., Mano & Oliver, 1993; Spangenberg, Voss, & Crowley, 1997; Voss, Spangenberg, & Grohmann, 2003). Typical hedonic attributes, being included in many of these scales, are "exciting", "interesting", "thrilling", or "fun", typical utilitarian attributes are "efficient", "practical", "necessary", or "useful" (e.g., Batra & Ahtola, 1990; Mano & Oliver, 1993; Spangenberg et al., 1997; Voss et al., 2003). All in all, the hedonic/utilitarian model became well established in consumer research and was applied to a wide variety of products, most of which are fast moving consumer goods (e.g., household supplies, office supplies, toiletries, food items, clothes). Occasionally, the hedonic/utilitarian model was also applied to interactive products such as laptops or mobile phones (e.g., Chitturi et al., 2008; Park & Mowen, 2007), to non-material products and services such as vacations (e.g., Kivetz & Simonson, 2002) or festivals (Gursoy, Spangenberg, & Rutherford, 1996), or the shopping experience itself (Babin, Darden, & Griffin, 1994; Chandon et al., 2000). For some of the products they studied, Batra and Ahtola (1990) found one of the dimensions to be considerably higher correlated to global product evaluation than the other. For lemonade, for example, hedonic quality was more predictive for the product's global evaluation, but for cleansing equipment, pragmatic quality was more deciding. Accordingly, Batra and Ahtola (1990, p. 163) conclude that a good soft drink is one that is superior regarding hedonic aspects and a good cleanser is one that is superior regarding utilitarian aspects. Obviously, there are certain product categories with an inherent link to one of the dimensions, such as soft drinks (primarily hedonic) or cleansing agents (primarily pragmatic). For other products studied (e.g., cars, CD players), however, both dimensions were predictive for global measures like product satisfaction or purchase intention (e.g., Batra & Ahtola, 1990; Mano & Oliver, 1993; Voss et al., 2003). Regarding the product domain of interest in the present thesis, i.e., interactive products, hedonic and pragmatic attributes are relevant as well (e.g., Chitturi et al., 2008). This makes the domain of interactive products an interesting field of study: given that both dimensions have their respective share in product

experience, both must be taken into account for understanding consumer choice—and for creating a fully satisfying product experience.

### *2.1.2. The Impact of Hedonic and Pragmatic Attributes on Product Experience*

Besides the two dimensions' respective correlations to global product evaluation, a number of studies explored the relation of both dimensions to different facets of product experience, such as affect, emotions, involvement, or resulting specific cognitions such as brand attitude (e.g., Chandon et al., 2000; Chitturi et al., 2008; Dhar & Wertenbroch, 2000; Kempf, 1999; Mano & Oliver 1993). Taken together, the respective correlations of these measures to the hedonic and the utilitarian dimension suggest a "motivation-hygiene model" (see Herzberg, 1968). Hedonic quality serves as a "motivator", with the ability to create positive experience, and utilitarian quality as a "hygiene factor", with the ability to prevent negative experience only. For example, in the consumption experience framework presented by Mano and Oliver (1993), hedonic consumption is directly linked to positive affect, whereas utilitarian consumption is only related to negative affect. Similarly, Chitturi et al. (2008) found a correlation between hedonic benefits and promotion related emotions (e.g., cheerfulness, delight) on the one hand, and a correlation between utilitarian benefits and prevention related emotions (e.g., security, confidence) on the other hand. Moreover, they revealed an asymmetry in the respective reactions to positive versus negative product experience (i.e., expectations were met versus expectations were not met) between hedonic and utilitarian consumption. For hedonic consumption, positive product experience was related to higher arousal than negative experience. For utilitarian consumption, in contrast, negative product experience induced higher arousal than positive experience (Chitturi et al., 2008). The latter result might indicate a certain degree of utilitarian quality is regarded as a standard, and even a higher degree than expected does not create excitement. In other words, the utilitarian is likely to stand out negatively rather than positively. The hedonic, however, has the power to catch positive attention. This also impacts consumers' future purchase

intentions and their recommendations to others. In the reported study by Chitturi et al. (2008), for example, consumers were more likely to indulge in positive word of mouth and repeat purchase behavior when their hedonic expectations were met or exceeded compared to when their utilitarian expectations were met or exceeded. However, consumers were more likely to indulge in negative word of mouth and less likely to engage in repeated purchase when their utilitarian expectations were not met compared to when their hedonic expectations were not met. Altogether, hedonic attributes were thus more relevant for positive experience and utilitarian attributes more relevant for avoiding negative experience. Thus, assuming that product bonding results from positive experience, especially hedonic attributes may be relevant for the evolvment of the relationship between owner and product. As Belk (1988) argued, possessions are often incorporated into the extended Self, i.e., they are regarded as parts of oneself and reflect one's identity. Presumably, this process is mainly based on Self-related, hedonic attributes. Accordingly, a primarily hedonic product will likely create a higher degree of product bonding than a primarily utilitarian one. This may also explain the findings by Dhar and Wertenbroch (2000), who reported a higher endowment effect for hedonic compared to utilitarian goods. Once acquired, a hedonic good may quickly be considered as an appreciated part of oneself, which people naturally want to keep hold of, whereas utilitarian goods always remain replaceable.

## 2.2. THE HEDONIC/PRAGMATIC MODEL OF USER EXPERIENCE

### 2.2.1. *Introducing the Hedonic to HCI*

The differentiation between hedonic and utilitarian (here mostly called "pragmatic") product attributes has also been recognized as a valuable approach in the field of HCI. Since HCI is a traditionally task-oriented discipline, pragmatic product attributes had always been the focus of attention. However, the explicit consideration of hedonic attributes, beyond task-fulfillment, was a sort of revolutionary step. This coincided with a general reorientation in HCI research, the so-called "experiential turn". For example, Hassenzahl and Tractinsky (2006, p. 91) pointed out that "as technology matured, interactive products became not only more useful and more usable, but also fashionable, fascinating things to desire". Researchers started to acknowledge aspects such as pleasure (Jordan, 1998, 2002), fun (Draper, 1999), beauty (Tractinsky, Katz, & Ikar, 2000), the ludic (Gaver, 2002), emotions (Desmet et al., 2001), and experience (McCarthy & Wright, 2004). Accordingly, the classical notion of usability was replaced by the more holistic term "User Experience" (UX). Though different in detail, these approaches agree that attributes beyond effectiveness and efficiency play an important role for the appeal and acceptance of interactive products. Accordingly, many of the available models of User Experience broadly distinguish between instrumental, task-oriented, pragmatic and non-instrumental, self-oriented, hedonic attributes of interactive products (see Hassenzahl, 2010 for an overview). Note that the term attribute does not imply being an actual feature of the product. An "attribute" is understood as a quality aspect that individuals ascribe to the product, based on information provided or personal experience. The pragmatic attribute "usability" is thus a judgment about a product's *perceived* capability to achieve a given task, in a given context, with a certain efficiency. This is akin to "apparent usability" (Kurosu & Kashimura, 1995) or "perceived usability" (e.g., Tractinsky et al., 2000). The hedonic attribute "beauty" can be understood as a judgment as well. Hassenzahl (2008), for example, defined a product's beauty as "a predominantly affect-driven evaluative

response to the visual Gestalt of an object". In the following, product attributes like "usability" and "beauty" thus refer to people's judgments about those particular aspects of interactive products.

Hassenzahl, Platz, Burmester, and Lehner (2000) first introduced the notion of hedonic and pragmatic (back then "ergonomic") quality to HCI and further developed the concept. In parallel with consumer research, several scales capturing hedonic and pragmatic quality of interactive products have been developed (e.g. Hassenzahl et al., 2003), some of them intended for application on specific products such as websites (Huang, 2004), mobile information services (Van der Heijden & Sangstad Sørensen, 2003) or computers (Karson, 2000). Here, the respective items used to capture hedonic and pragmatic quality were quite similar to those in consumer research. Typical hedonic attributes were "captivating", "exciting", "inventive", or "professional", typical pragmatic attributes were "practical", "simple", or "useful" (e.g., Hassenzahl et al., 2003; Van der Heijden & Sørensen, 2003). Overall, the hedonic/pragmatic model has been well adopted in HCI research and accordingly was applied to a wide variety of products and activities, e.g., mp3-players (Hassenzahl, Schöbel, & Trautmann, 2008), business software (Schrepp, Held, & Laugwitz, 2006), websites (van Schaik & Ling, 2008), mobile phone ringtones (Turel, Serenko, & Bontis, 2010), robots (Lee, Shin, & Sundar, 2011), mobile data services (Kim & Han, 2011), and online shopping (O'Brien, 2010). Hedonic and pragmatic attributes continuously emerged as two independent factors, and both dimensions have been identified as relevant predictors of an interactive product's overall evaluation (e.g., Hassenzahl, 2001; Hassenzahl et al., 2003; van Schaik & Ling, 2008, 2011).

### 2.2.2. *The Importance of Hedonic Attributes for User Experience*

At the first glance, the prime importance of hedonic quality for positive experience of interactive products may appear surprising, since there is no inherent link between hedonic attributes and a product's main purpose, i.e., task fulfillment. However, there are several reasons why especially hedonic attributes are crucial for product experience, i.e., (1) their close relation to the user's Self and universal human needs, (2) their role as a motivator, directly contributing to positive affect, and (3) their prior impact on the formation of product evaluation. The following paragraphs outline relevant research findings regarding each of these aspects.

From a goal hierarchy perspective, hedonic and pragmatic attributes can thus be regarded as supporting goals on different levels (Hassenzahl, 2003, 2010): pragmatic quality summarizes the product's perceived ability to support the achievement of *do-goals*, such as "making a telephone call", "finding a book in an online-bookstore", or "setting up a webpage". However, people do those things for a reason. "Making a telephone call" is not an end in itself but serves higher-level goals, such as "being related to one's spouse", "being stimulated when bored", consequently called *be-goals* (see Carver & Scheier, 1998). Hedonic quality summarizes the product's perceived ability to support the achievement of such *be-goals*, and can thus be regarded as the essential reason for product interaction. These differing goals related to hedonic and pragmatic consumption were, to some extent, also discussed in consumer research. Hirschman and Holbrook (1982), for example, described utilitarian products as a means to an end and hedonic consumption as an end in itself. Similarly, Chandon et al. (2000) emphasized the differentiation between hedonic and pragmatic benefits as intrinsic versus extrinsic benefits. However, the potential source of this "intrinsic" pleasure was neither explored nor further discussed. HCI research advanced this perspective and suggested universal human needs as drivers of hedonic quality attributions (e.g., Hassenzahl, 2001, 2003, 2010; Hassenzahl et al., 2010). To give an example, if interacting with a product fulfills the user's need for stimulation, i.e., the user feels stimulated, he or she may attach the attribute "stimulating" (or a similar

attribute, e.g., "captivating", "novel"), saying that the product is stimulating. While earlier work focused on particular needs such as novelty, change, social power (Hassenzahl, 2001), stimulation, identification, and evocation (Hassenzahl, 2003), more recent work (Hassenzahl, 2010) took a broader view and referred to humans' psychological needs as a source for positive experience in general, in line with psychological theories (for an overview on theories of universal human needs see Sheldon, Elliot, Kim, & Kasser, 2001). In a study by Hassenzahl et al. (2010), participants were asked to describe a recent, positive experience with a technical product. Participants then rated this experience on different scales, regarding the product's perceived hedonic and pragmatic quality, the amount of positive and negative affect, the fulfillment of different needs, and the perceived influence of the product for the experience. Need fulfillment was identified as main predictor of positive affect, with stimulation, relatedness, competence and popularity being the most salient needs. Need fulfillment was also directly linked to hedonic quality perceptions. However, this relation was moderated by the perceived influence of the product. Thus, hedonic quality is need fulfillment attributed to the product (Hassenzahl et al., 2010, p. 361). To sum up, assessing a product's pragmatic quality calls for a focus on functionality and usability in relation to a potential task at hand, assessing a product's hedonic quality calls for a focus on the Self and its needs.

Again in parallel with consumer research, Hassenzahl et al. (2010) revealed support for a motivation-hygiene model. They found a direct link between hedonic quality and positive experience, but only an indirect link between pragmatic quality and positive experience. Obviously, hedonic quality acts as a "motivator", enabling positive experience in a direct way. Pragmatic quality, in contrast, forms a "hygiene factor", whose absence will certainly stand out in a negative way, but whose existence itself is not a rich source of pleasure. Removing barriers to task-fulfillment will never arouse enthusiasm. Moreover, there is a different attitude of expectation toward hedonic and pragmatic attributes. Especially in the domain of interactive products, traditionally considered as tools, a certain level of pragmatic quality may be taken for granted. To



give an example: a mobile phone's speech quality is simply expected. If the phone is not good at this, it will be experienced as negative. However, a phone is rarely praised for its speech quality (except by tech journalists). Hedonic quality, such as an outstanding, beautiful design, perfectly fitting one's personal style, however, is able to directly evoke positive emotions and desire. Hedonic attributes, thus, can more easily impress by exceeding expectations.

Finally, hedonic attributes continuously exert influence on product experience. Compared to pragmatic attributes, their access to users' perception and attention is more direct: pragmatic benefits are discovered over time, while actually using the product. Hedonic attributes like beauty, for example, influence the relationship between user and product from the very first sight (Bloch, Brunel, & Arnold, 2003; Hollins & Pugh, 1990). A first visual impression generates an evaluative response towards the product (Lindgaard, 2007), which is likely to impact later judgments about value and quality (Hassenzahl & Monk, 2010). Especially the famous notion of Tractinsky and colleagues (2000) saying 'what is beautiful is usable' aroused great interest. Even though no conceptual link between these two attribute exists—there is no reason to believe that a product's beauty should enhance its usability or vice versa—empirical studies repeatedly reported a positive correlation between beauty and usability or related attributes (e.g., DeAngeli, Sutcliffe, & Hartmann, 2006; van Schaik & Ling, 2003; Tractinsky et al., 2000). In a review of such studies, Hassenzahl and Monk (2010) pointed out that judgments on beauty and usability attributes rely on a different level of accessibility: usability is only accessible through interaction, whereas beauty is already revealed by visual presentation. The mystic correlation between beauty and usability quality thus may be explained by an inference perspective: immediately accessible attributes, like beauty, are taken as a basis for the judgment on the product's overall "goodness". Perceived "goodness", in turn, influences judgments on other, less directly accessible attributes like usability. Indeed, a reanalysis of different data sets revealed a full mediation of the relation between beauty and usability by goodness (Hassenzahl & Monk, 2010). The direct accessibility

of beauty and its influence on further quality judgments points out the predominant position of hedonic attributes within the development of product experience over time. Regarding the present research interest, i.e., the respective impact of hedonic and pragmatic attributes in choice situations, differences in accessibility between the two were relevant as well. In real choice situations, people hardly get a chance of real interaction with the product. Judgments on pragmatic quality thus often rely on external sources such as feature lists, test reports, customer surveys or recommendations by others. This situation was mirrored in present study settings, where information on pragmatic quality was always provided by verbal presentation. Information on hedonic quality was, in some studies, also provided by visual presentation, i.e., by presenting products of differing beauty.

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## 3. THE DILEMMA OF THE HEDONIC

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As discussed in the previous chapter, hedonic product attributes are of crucial relevance for positive (User) experience. It thus seems self-evident that they should be considered important in product choice as well. A strict perspective of maximizing consumption utility would suggest weighting each attribute according to its contribution for overall experience. In the case of hedonic attributes, however, people regularly deviate from this perspective. The first spontaneous idea might be that people are overwhelmed by their emotions and thus overvalue hedonic attributes—at least this was most people's first guess, when hearing that my research was concerned with the impact of hedonic and pragmatic attributes in choice situations. Indeed, the opposite seems to be the case. Study findings from consumer research suggest that people actively counteract being driven by emotion, and focus on "rationalistic" choice criteria instead (e.g., Hsee et al., 2003): hedonic attributes appear too emotional, irrational, and superfluous for being a reason for choice (e.g., Chitturi et al., 2007; Hsee et al., 2003; Kivetz & Simonson, 2002; O'Curry & Strahilevitz, 2001; Okada, 2005). In consequence, people are generally skeptical about hedonic attributes as legitimate choice criteria and may even undervalue the hedonic in choice situations. This creates a dilemma: if hedonic attributes are downplayed in choice, although they are crucial for the quality of experience, people may end up choosing a product they actually don't want.

The present chapter reports on theoretical approaches and empirical study findings which, taken together, support the assumption of a dilemma of the hedonic, with justification as underlying factor. Chapter 3.1 discusses inconsistencies between choice and experience with justification being a potential reason for these. Chapter 3.2 then discusses the findings reported in Chapter 3.1 with regards to the hedonic/pragmatic model, presented in Chapter 2. More specifically, Chapter 3.2

proposes a comparatively low justifiability of hedonic attributes: based on people's general need for justification, differences in justifiability between hedonic and pragmatic options may lead to choosing the latter, even if secretly preferring the former. Chapter 3.3 strengthens this assumption by reporting preference shifts between hedonic and pragmatic options, depending on the contextual need for justification.

### **3.1. JUSTIFICATION AS A REASON FOR CHOICE AGAINST TRUE PREFERENCE**

Typical inconsistencies between choice and experience were demonstrated by Hsee and colleagues' (2003) work on "lay rationalism". In a series of studies on choice situations they revealed a tendency to resist affective influence and to rely on seemingly rationalistic instead. However, what people considered to be rational choice making actually resulted in a suboptimal experience: while people focused on particular "rationalistic" attributes, they neglected other attributes, of equal or even superior importance for their product experience. The consequence is a systematic discrepancy between what people predict to enjoy the most, and what they actually choose.

Hsee et al. (2003) showed up several manifestations of such choices against "true" preferences (in the sense of maximum enjoyment). "Lay functionalism", for example, leads to a focus on a product's primary function. In consequence, factors unrelated to the primary function or objective—but still important for the overall experience—are neglected. In a study, Hsee et al. (2003) confronted participants with the choice of purchasing one of two television sets. A considerable part of participants chose the one with the higher picture but lower sound quality, rather than the one with a more balanced distribution of sound and picture quality. Another group of participants was asked to pick the one they would *enjoy* the most. In this more experiential frame, more participants preferred the one with the more balanced distribution. Those participants obviously considered the movie watching experience as a whole, whereas in the

aforementioned purchase frame, participants focused on maximizing the quality of the primary function only (i.e., picture quality for a TV), which may eventually lead to a less positive experience. In contrast to "lay functionalism", which suggests a focus on the primary function, "lay economism" suggests a focus on the total/absolute economic payoff. Finally, "lay scientism" leads to a focus on hard, objective, and unequivocal attributes and relative neglect of soft, subjective, and malleable attributes.

All in all, people's concern about affective biases in choice making generates an immoderate focus on a product's primary function, economic benefits, and hard, objective attributes, which eventually leads to a non-optimal choice. Hsee and colleagues (2003) also discussed possible underlying factors of "lay rationalism". Amongst others, they referred to transaction utility theory (Thaler, 1985), the prominence effect (Tversky, Sattah, & Slovic, 1988), or choice making based on rules and reasons (e.g., Amir & Ariely, 2002; Shafir, Simonson, & Tversky, 1993; Simonson & Nowlis, 2000). Hsee and colleagues (2003) argued that rule based choice making (here: focus on the rationalistic) may be an insurance against an anticipated need for justification: one could always refer to having chosen the objectively best option, which most people would have chosen.

People's general need for justification, its potential influence on choice and decision making, as well as underlying psychological mechanisms have been discussed by various authors. Whenever they make a decision, people are eager that this decision appears justified, both to themselves (e.g., Shafir et al., 1993) as well as to others (see Lerner & Tetlock, 1999 for a review). While the former is oriented towards coping with one's own beliefs about valid decision criteria, the latter is oriented towards (expected) beliefs of others (e.g., Schmeier, 2002). In practice, however, the need for internal (the need to justify a choice to oneself) and external justification (the need to justify a choice to others) may not always be clearly distinguishable. As Lerner and Tetlock (1999, p. 270) point out, "[...] people do not think and act in a social vacuum. The social necessity of explaining our actions shapes thought [...]". Even if there is no

apparent need for external justification, people may nevertheless consider it, and, thus, imagine how to explain a decision to others.

Simonson (1989) suggests a list of various psychological mechanisms that may contribute to the need for internal justification and external justification: internal justification may stem from a desire to enhance one's self-esteem (Hall & Lindzey, 1987), anticipated regret (Bell, 1982), cognitive dissonance (Festinger, 1957), and people's ideal self of a rational decision maker (Abelson, 1964). The latter may be of particular relevance for the different manifestations of "lay rationalism" reported above. Regarding external justification, Simonson (1989) suggests self-presentation and impression management (e.g., Baumeister, 1982), social exchange (e.g., Blau, 1964), and the need for conformity (e.g., Deutsch & Gerard, 1955) as potential underlying factors. Consequently, inter-individual differences within the relative specification of these needs may result in inter-individual differences in people's general need for justification. Mero, Guidice, and Anna (2006) already identified some person variables that affect people's reactions (i.e., the perceived need for justification) to accountability manipulations, such as conscientiousness (Costa & McCrae, 1992) and public self-consciousness (Fenigstein, Scheier, & Buss, 1975).

The various psychological aspects behind the need for justification illustrate its constant presence in various contexts, including choice situations. Accordingly, several authors suggested a shift in focus from outcome of choice to justifiability of choice (however using slightly different terms). For example, Simonson and Nowlis (2000) argued that people focus on the choice of good reasons rather than on the choice of good options, Prelec and Herrnstein (1991) argued that people do not necessarily think about benefits related to different choice options but rather apply (culturally adopted or self-constructed) rules, and Shafir et al. (1993) argued that people do not always choose the best option but that option which is easiest to justify. In line with the phenomenon of "lay rationalism" (Hsee et al., 2003), people's need for justification thus may lead to making the choice which can be justified best, instead of making the choice which one will enjoy the most.

Applied to the hedonic/pragmatic model, the reported findings indicate a relative neglect of hedonic attributes in choice situations. While pragmatic attributes are often hard, objective attributes, related to a product's primary function ( i.e., what people generally consider rationalistic and relevant choice factors), hedonic attributes are often subjective, malleable, and unrelated to a product's primary function ( i.e., what people generally consider irrational and irrelevant choice factors choice factors). Despite their relevance for experience, the latter may be considered as inappropriate choice criteria. Such a tendency to neglect the hedonic in choice situations appears even more likely when taking into account justification as a potential influencing factor on choice. Due to their need for justification, people may not think about the concrete benefits related to choosing either the hedonic or the pragmatic, but which choice is more justified. Here, pragmatic attributes are at natural advantage, particularly in the present product domain of interest, i.e., interactive products.

### **3.2. AN ASYMMETRY IN JUSTIFIABILITY BETWEEN HEDONIC AND PRAGMATIC ATTRIBUTES**

There are several reasons for a lower justifiability of hedonic compared to pragmatic attributes in choice situations, which then may lead to a focus on the latter. First, pragmatic attributes provide an inherent justification, i.e., they contribute to task fulfillment. Hedonic attributes, in contrast, are not essential for the product's primary objective, particularly in the domain of interactive products. The still prevailing association of interactive products with tools thus makes hedonic attributes more difficult to justify. Second, it is far easier to construct reasons related to pragmatic than to hedonic benefits. In contrast to task-related benefits, experiential benefits due to hedonic attributes are much harder to verbalize or quantify (Okada et al., 2005; Sela, Berger, & Liu, 2009). The soft and subjective nature of hedonic attributes makes them much less suitable for justification. Third, there is a widespread association of hedonic attributes with luxury on the one hand, and pragmatic attributes and necessities on the other hand (e.g., Prelec & Herrnstein, 1991; Okada, 2005; Kivetz & Zheng, 2006; Strahilevitz and Myers, 1998). Indeed, Kivetz and Simonson (2002, p. 156) argued that although conceptually, luxuries are not necessarily hedonic and necessities are not always pragmatic, these classifications tend to be correlated, which may overrule specific case-to-case considerations. Thus, primarily hedonic products are generally regarded as luxuries. Luxuries, in turn, are per definition not essential and thus difficult to justify, at least according to the Protestant ethic of frugality (e.g., Weber, 1958). Any expense on hedonic attributes may thus leave a bitter taste, or even feelings of guilt (e.g., Lascu, 1991). Induced by people's general need for justification, the comparatively low justifiability of hedonic attributes could lead to downplaying hedonic attributes in choice situations, despite their role as drivers of positive experience. What emerges is a gap between choice (predominantly driven by the pragmatic) and experience (driven by the pragmatic and the hedonic)—a hedonic dilemma.



Hedonic attributes may not be disregarded *per se*—they may even attract more attention than pragmatic attributes. As long as no tradeoff between hedonic and pragmatic is required, hedonic attributes can be considered in secret. Accordingly, a study by Tractinsky and Zmiri (2006) showed that people justified their choice by referring to pragmatic attributes, even though statistical analysis revealed hedonic attributes to be the decisive factor. In other words, pragmatic attributes served as a justification for hedonic benefits, i.e., a "functional alibi" (Keinan, Kivetz, & Netzer, 2009). Keinan et al. (2009) argued that "consumers rationalize their frivolous behavior by inflating the perceived value of minor functional features or aspects of the luxury product [...]. For example, consumers whose cars never touch a dirt road often justify the purchase of an extravagant SUV by its performance in extreme driving conditions". Such a "functional alibi" may serve as a justification to others and also to oneself, a clear distinction between internal and external justification is of no relevance here. Providing pragmatic reasons for hedonic desires is not considered as conscious "cheating" but rather as an attempt to align hedonic desires with deeply ingrained beliefs about appropriate choice criteria. Thus, even if hedonic attributes were actually crucial for choice, they may be rarely acknowledged as such on an overt, rational level. However, the "true" reason for choice will become obvious as soon as a choice requires an explicit tradeoff between hedonic and pragmatic attributes. Then, the need for justification may lead to a neglect of hedonic attributes, due to their lacking justifiability. One may think of it as a continuum: as long as the need for justification is low (e.g., due to the lack of an explicit trade-off between hedonic and pragmatic), there is no need to question the desire for the hedonic. But with mounting need for justification, justification may trump one's desire, and the attribute's justifiability becomes more relevant for choice than its impact on experience.

### 3.3. THE DIFFERENTIAL EFFECT OF JUSTIFICATION ON HEDONIC AND PRAGMATIC CHOICE

The assumed relation between problems of justification and *hedonic* product choice in particular implies a differential effect of justification on hedonic and pragmatic choice: hedonic choice should be susceptible to variations in justifiability or variations in the general need for justification, whereas pragmatic choice (which is justified *per se*) should not. This assumption is supported by a number of studies from consumer research. While some of them explored the effect of enhanced *justifiability of choice*, by providing additional justifications such as promotions or discounts (e.g., Chiou & Ting, 2011; Khan & Dhar, 2010; Park & Mowen, 2007; Strahilevitz & Myers, 1998; Zheng & Kivetz, 2009), others explored the effect of a reduced *need for justification*, by contrasting different choice contexts (e.g., Böhm & Pfister, 1996; Chitturi et al., 2007; O'Curry & Strahilevitz, 2001; Okada, 2005; Sela et al., 2009).

Zheng and Kivetz (2009), for example, revealed a differential effect of the effectiveness of promotion for primarily hedonic and primarily pragmatic products. For primarily hedonic products, promotion led to a significant increase in purchase, since it provided a welcome justification for a purchase which would have been hard to justify otherwise. In contrast, pragmatic product purchase is justified *per se* and was thus not affected by external justifications provided by promotions. Khan and Dhar (2010) studied the effectiveness of discounts on certain items in product bundles. They revealed discounts (i.e., potential justifications for product purchase) to be more effective when framed as savings on the hedonic item than when framed as savings on the pragmatic item—even though the total price for the two products remained the same. Similarly, Strahilevitz and Myers (1998) revealed bundling of products with promised contributions to charity to be more effective for hedonic than pragmatic goods. Park and Mowen (2007) studied the effectiveness of trade-in options as purchase incentives and revealed a relative increase (compared to a "regular" sale condition) in likelihood of purchase for a hedonic but not for a pragmatic product. Finally, Chiou and Ting (2011) revealed a differential effect of shopping motivation

(goal oriented vs. experiential) on hedonic and pragmatic purchase. Again, pragmatic purchase was unaffected by the context. Expenses on hedonic products, however, increased when the purchase was framed as planned and related to a particular objective—which facilitated justification. Taken together, these findings indicate that the problem of justification is especially salient for the acquisition of primarily hedonic products, which emphasizes the general asymmetry in the justifiability between hedonic and pragmatic attributes.

Böhm and Pfister (1996) found an increased focus on hedonic attributes for product choices in private compared to public contexts. Similarly, O'Curry and Strahilevitz (2001) found a preference for pragmatic products in standard purchase situations, but a shift to hedonic products when it was about choosing lottery prizes. They argue that in the context of windfall gains, such as lottery prizes, unexpected bonuses, or gifts, acquiring a hedonic good may lead to less guilt over the frivolity of the acquisition than would be derived from spending one's hard earned income on the same hedonic good (O'Curry & Strahilevitz, 2001, p. 40). A reduced pain of paying, and thus, a reduced need for justification may also explain the findings by Okada (2005), who revealed that people are willing to pay more in time for hedonic goods and more in money for utilitarian goods. In addition, preferences for pragmatic versus hedonic options vary between separate choice (i.e., only one product to choose or reject) and joint choice (i.e., a choice between two or more products simultaneously). In a field study in a restaurant, Okada (2005) studied preferences for a more "pragmatic", healthy dessert (low-fat Cheesecake deLite) and a "hedonic", less healthy, but probably more delicious, dessert (Bailey's Irish Cream Cheesecake). When both desserts were offered on the same day (i.e., jointly), the pragmatic cake was ordered more frequently. But when each dessert was offered on a different day (i.e., separately), preferences reversed. Again, this preference shift from the pragmatic (in a joint choice situation) to the hedonic (in a separate choice situation) can be explained by justification. Choice in a joint situation requires an explicit trade-off, i.e., an explicit comparison of attributes (e.g., healthy versus tasty), which implies

justification. The absence of such a trade-off in a separate choice situation leads to a relative reduction of the need for justification, and a corresponding increase of hedonic choice. Obviously, it is a lot easier to indulge in hedonics when there is no pragmatic alternative whose rejection has to be justified.

In addition to separate choice, the demand for a direct trade-off can also be prevented by asking for evaluation instead of choice. While choice between two options requires a definite decision for one option (and against the other), evaluation measures (e.g., ratings, willingness-to-pay) allow for a way of preference elicitation with reduced need for justification. Accordingly, Chitturi and colleagues (2007) revealed pragmatic products to be preferred in choice tasks but a higher willingness to pay for hedonic products. By contrast, pragmatic choice rates increase with raising demands for justification. For example, Sela and colleagues (2009) revealed a shift to the pragmatic with increasing assortment size. They argued that choosing from larger assortments increases choice difficulty and (potential) regret, and thus, leads to choices which are easy to justify, i.e., primarily pragmatic products. However, when external justifications for indulgence were provided, the effect reversed, which confirms the assumption of justification as underlying factor. All in all, the reported studies revealed a shift from the pragmatic to the hedonic under conditions of reduced need for justification. This may indicate a "true" preference for the hedonic, and, unless people find a way for justification, a choice against true preference.

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## 4. MAIN HYPOTHESES AND OVERVIEW OF STUDIES

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The present chapter first gives an overview of main research questions hypotheses derived from theory and empirical findings laid out in the previous chapters. I then summarize how these hypotheses were addressed in the series of seven empirical studies, presented in the following chapters. As pointed out in Chapter 2, consumer research and Human-Computer Interaction unanimously acknowledged the hedonic as an important quality of products and emphasized its relevance for (User) experience. It seems only natural that hedonic attributes should be considered accordingly in choice. However, HCI researchers rarely questioned whether people do so—even though the potential neglect of hedonic attributes was already well discussed in consumer research (see Chapter 3), and even though the consequences of product choice seem even more severe in the domain of interactive, durable products.

The present thesis addresses this gap by a systematic exploration of the consequences of attributes of interactive products in choice situations, with a special focus on the tension between hedonic and pragmatic attributes. By referring to relevant work from consumer research, I provided evidence for two basic assumptions. First, an asymmetry in the justifiability of hedonic and pragmatic attributes, wherein the justifiability of hedonic attributes is comparatively lower than that of pragmatic attributes (see Chapter 3.2). Second, a differential effect of variations in justifiability as well as the need for justification on hedonic and pragmatic choice (see Chapter 3.3). In other words this means, whenever a choice between a predominantly hedonic and a predominantly pragmatic option requires justification, a pragmatic choice may not be driven by a true preference but by a felt need for justification. Such an effect could have far-reaching consequences within the field of HCI (see Chapter 7 for a

detailed discussion). The most obvious disadvantage of neglecting the hedonic possibly pertains to the perspective of the user, given its prime importance for positive User Experience (see Chapter 2.2). I thus hypothesize a hedonic dilemma, i.e., a choice against true preference, due to justification. This notion includes several core assumptions, depicted in Figure 1: (1) a comparatively low justifiability of hedonic compared to pragmatic attributes, which becomes relevant in choice situations, especially when a tradeoff is required. Despite (2) a desire and thus a *true* preference for the hedonic, (3) people may then choose the pragmatic, (4) due to their felt need for justification. Accordingly, choice rates should be susceptible to variations in the individual need for justification.

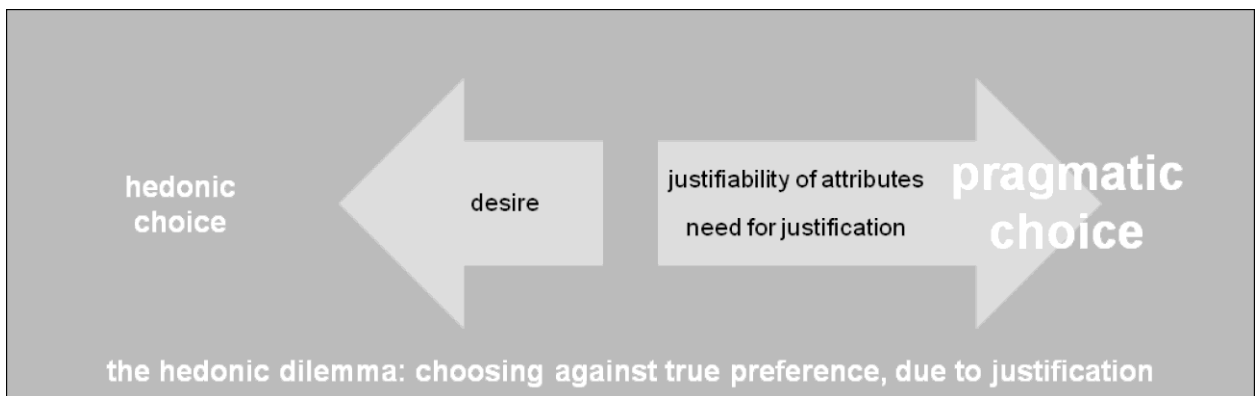


Figure 1: Conceptual model of the hedonic dilemma.

The first set of studies (Study 1 – Study 4, see Chapter 5) tested and replicated the hedonic dilemma's core assumptions by different measures and operationalizations. Study 1 revealed a relative reluctance to pay for a surplus in hedonic compared to pragmatic quality, which was a first indicator of assumed differences in the justifiability of hedonic and pragmatic attributes of interactive products. Study 2 compared the relative impact of hedonic and pragmatic attributes for being a source of preference. Statistical analysis indicated hedonic attributes to be the secret driver for choice, which supported the assumption of a true preference for the hedonic. When asked for a justification, participants however emphasized the pragmatic. Once again, this indicated the justifiability of pragmatic attributes to be higher than that of hedonic

attributes. Study 3 completed the notion of the hedonic dilemma by revealing a predominance of pragmatic choice in a tradeoff situation, and confirming justification as underlying factor by participants' self-reports on the choice process. Here, a positive correlation between the perceived need for justification and pragmatic choice occurred. However, more positive affect was related to the hedonic, once again supporting the notion of a true preference for the hedonic. The interpretation of pragmatic choice as a choice against one's true preference was further validated by participants' self-reports on affective consequences in Study 4. Here, even participants who had chosen the pragmatic, associated an involuntarily change to the hedonic with positive affect, indicating that their previous choice was against their true preference. Altogether, this first set of studies demonstrated the existence of a hedonic dilemma in the context of interactive products and supported the notion that justification lies at the heart of it.

The validation of the hedonic dilemma's core assumptions in the first set of studies then allowed the development of strategies to alleviate it. The confirmation of justification as a key suggested that choice rates should be experimentally manipulable, through justification. Both, an experimentally enhanced *justifiability of hedonic choice* as well as a reduced contextual *need for justification* should minimize the impact of justification and consequentially lead to an increase in hedonic choice. In contrast to hedonic choice, pragmatic choice should not be affected by variations in the impact of justification, since its justifiability is high per se. These derivations were tested in a second set of studies (Study 5 – Study 7, see Chapter 6). Study 5 explored the respective effects of an enhanced justifiability of hedonic and pragmatic choice. Only for the hedonic, however, an according increase in choice rates occurred. Study 6 enhanced the justifiability of hedonic choice by legitimating hedonic attributes. The enhanced justifiability led to an increase in hedonic choice rates, compared to a control condition. Study 7 reduced the general need for justification by framing a purchase as gratification. The effect of variations in the need for justification on choice was studied separately, for a hedonic and a pragmatic product. While the

reduced need for justification enhanced hedonic product choice, pragmatic choice was not affected.

To sum up, the first group of studies (Study 1 – Study 4, see Chapter 5) focused on testing the core assumptions of the hedonic dilemma, the second group of studies (Study 5 – Study 7, see Chapter 6) tested derivations on how to reduce the dilemma by manipulating justification. Tested hypotheses were renumbered within each study, since each of them focused on slightly different indicators and measures, thus resulting in different experimental hypotheses. Table 1 shows the mapping between theoretical assumptions, respective indicators and their experimental check through the various studies.



CHAPTER 4 MAIN HYPOTHESES AND OVERVIEW OF STUDIES

Table 1: Mapping between theoretical assumptions and experimental check in empirical studies

| Theoretical assumption  | Indicator   | Experimental check | Confirmed |
|---|---|--------------------|-----------|
| Low justifiability of hedonic compared to pragmatic attributes              | A lower willingness to spend money on hedonic compared to pragmatic attributes  | Study 1, H1        | Yes       |
|   | Reference to pragmatic attributes when justifying a choice, even if hedonic attributes were truly deciding                        | Study 2, H3        | Yes       |
| True preference for the hedonic over the pragmatic                          | Hedonic attributes as secret driver for preference  | Study 2, H1        | Yes       |
|   | Positive correlation between positive affect and receipt of a hedonic product   | Study 3, H3        | Yes       |
|   | Positive correlation between positive affect and receipt of a hedonic product—even if participants previously chose the pragmatic | Study 4, H2c       | Yes       |
| Predominance of pragmatic choice in standard choice situations              | More frequent choice of a predominantly pragmatic compared to a predominantly hedonic product                                     | Study 3, H1        | Yes       |
|   |   | Study 4, H1        | Yes       |
|   |   | Study 6, H3        | No        |
| Susceptibility of choice to individual need for justification               | Positive correlation between perceived need for justification and pragmatic choice  | Study 3, H2        | Yes       |
| Susceptibility of hedonic choice to justifiability of choice                | Increase in hedonic choice rates through experimentally enhanced justifiability of hedonic choice                                 | Study 5, H1        | Yes       |
|   |   | Study 6, H1        | Yes       |
| Non-susceptibility of pragmatic choice to justifiability of choice          | No increase in pragmatic choice rates through experimentally enhanced justifiability of pragmatic choice                          | Study 5, H2        | Yes       |
| Susceptibility of hedonic choice to contextual need for justification       | An increase in hedonic choice rates through experimentally reduced need for justification   | Study 7, H2        | Yes       |
| Non-susceptibility of pragmatic choice to contextual need for justification | No increase in pragmatic choice rates through experimentally reduced need for justification                                       | Study 7, H1        | Yes       |

Note. H = Hypothesis

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## 5. PROOF OF EXISTENCE OF THE HEDONIC DILEMMA

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The present chapter reports on the testing of the hedonic dilemma's core assumptions in four empirical studies. Study 1 tested the assumption of an asymmetry in the justifiability of hedonic and pragmatic attributes by a comparison of participants' willingness to spend money for a surplus in hedonic and pragmatic quality. Study 2 tested the same assumption by a qualitative analysis of justifications provided for choice. In addition, Study 2 tested the assumption of a true preference for the hedonic by a statistical analysis of crucial attributes for preference formation. Study 3 and Study 4 further validated this assumption by studying affect related to the prospect of receiving a hedonic versus a pragmatic product. Furthermore, Study 3 explored the role of justification as underlying factor by participants' reports on perceived need for justification. Finally, Study 3 and Study 4 tested the assumed predominance of pragmatic choice in choice situations that require a tradeoff between hedonic and pragmatic quality.

### **5.1. STUDY 1: AN ASSYMETRY IN THE WILLINGNESS TO SPEND MONEY ON HEDONIC AND PRAGMATIC ATTRIBUTES**

#### *5.1.1. Hypotheses and Procedure*

Study 1 explored differences in justifiability between hedonic attributes and pragmatic attributes and consequences on choice. Assuming a lower justifiability of hedonic compared to pragmatic attributes, I expected a higher reluctance to spend money on a hedonic attribute compared to a pragmatic attribute. Participants were required to choose between two different mobile phones. One mobile phone was more expensive

than the other (by 50%) but also offered a higher value on a given attribute. This attribute was either beauty (i.e., a hedonic attribute) or usability (i.e., a pragmatic attribute). The *attribute* (hedonic, pragmatic) was thus realized as between-subjects factor. The attributes' values were given as relative descriptors ("more beautiful", "more usable"). In the *hedonic attribute* condition, participants were told that the only difference between the two phones for choice was that the more expensive phone was also more beautiful, i.e., they had to choose between a more hedonic but more expensive and a less hedonic but cheaper phone (see Hassenzahl & Monk, 2010, for the conceptual link between beauty and hedonic quality). In the *pragmatic attribute* condition, participants were told that the only difference between the two phones for choice was that the more expensive phone was also more usable, i.e., they had to choose between a more pragmatic but more expensive and a less pragmatic but cheaper phone. To control potential effects of the general price level, the *price level* (low, high) was included as additional between-subjects factor. Prices were provided in Euro. Hence, I employed a 2 x 2 between-subjects design, varying the *attribute* (hedonic, pragmatic) and the *price level* (low, high). Table 2 displays the resulting four choice situations.

Table 2: Four choice situations (between-subjects)

| Price Level | Attribute            |                   |
|-------------|----------------------|-------------------|
|             | Hedonic              | Pragmatic         |
| low         | neutral, 40€ vs.     | neutral, 40€ vs.  |
|             | more beautiful, 60€  | more usable, 60€  |
| high        | neutral, 100€ vs.    | neutral, 100€ vs, |
|             | more beautiful, 150€ | more usable, 150€ |

Since the mobile phones were only described, and no pictures were provided, one may argue that the created choice scenario was quite artificial. Buying a product without even having seen it may not be common practice. However, the purpose of this first study was not to simulate a real purchase, but to contrast the willingness to spend money for a hedonic compared to a pragmatic attribute. It was thus important that the higher selling price of the "better" phone was perceived as being solely due to a difference in a particular attribute value. This was achieved by using explicit, textual descriptors, such as "more usable". The scenario thus allowed for a direct test of the assumed differences between hedonic and pragmatic attributes in choice situations. Whether the surcharge for the "better" phone would be considered as an appropriate expense, may depend on the justifiability of the respective attribute. Since usability is a central attribute, closely linked to the primary function of a mobile phone, the extra expense on an increase in pragmatic quality would be easily justifiable. The justifiability of a hedonic attribute such as beauty is much lower: beauty serves "only" the Self, but does not contribute to the primary function of a mobile phone. Accordingly, I expected the "better", more expensive phone to be chosen more frequently when the attribute was usability compared to when the attribute was beauty (H1). In other words, choice rates were expected to reflect a "norm" that usability is worth paying for, but beauty is not. Moreover, the experienced difficulty of choice was studied as a further indicator of the perceived congruence between choice and norm. In general, choosing against a norm induces conflict, resulting in an increased experienced choice difficulty. In the present study, choosing the "better", more expensive phone was assumed to fulfill the norm in the case of usability but was assumed to contradict the norm in the case of beauty. This asymmetry should result in a disordinal interaction between the *choice* (neutral, less expensive vs. better, more expensive) and *attribute* (hedonic, pragmatic) on perceived difficulty of choice (H2a). More specifically, when the attribute was beauty, participants who finally chose the more beautiful and more expensive phone should report a higher difficulty of choice compared to those who chose the neutral, less expensive one (H2b). In contrast, given the attribute was usability, participants who chose the more usable and more

expensive phone should report a lower difficulty of choice compared to those who chose the neutral, less expensive one (H2c).

The study was carried out online with *SurveyMonkey* ([www.surveymonkey.com](http://www.surveymonkey.com)) in German. An invitation with a link to the study was sent to students' unions representatives of various universities in Germany, Austria and Switzerland. They were asked to distribute the link via mailing lists or their webpage. Accordingly, a response rate could not be computed. 422 of 425 individuals who started the survey completed it as well (99% retention rate). Those participants (N = 422, 261 female, mean age 38 years, min = 16, max = 70) constituted the final sample. Participants were randomly assigned to the four conditions. The introductory part of the survey presented the following scenario: "Imagine you need a new mobile phone. You already planned to spend all of your recent, unexpected monetary birthday present. There are two phones for choice." Depending on the experimental condition, the phones were then described by the respective information presented in Table 2. Furthermore, in the *low price level* condition, the birthday money was 100€, in the *high price level* condition it was 250€. This means, the "birthday money" always exceeded the price of the mobile phone and one would keep a rest of the money, even if one chose the more expensive alternative. The birthday present was introduced to avoid reasoning about whether one can afford the expense or not. Such a "windfall" situation, i.e., some extra, unexpected money, is generally associated with a reduced need for justifying expenses (e.g., O'Curry & Strahilevitz, 2001). Nevertheless, some participants might still consider expenses on beauty as not justified. After they had read the scenario, participants were asked to choose one of the two phones and to rate their experienced difficulty of choice on a five-point-scale, ranging from "very low" to "very high".

### 5.1.2. Results and Discussion

As expected (H1), choice rates differed significantly depending on whether the *attribute* was beauty or usability, and choosing the more expensive phone was more likely when the attribute was usability (79%) compared to beauty (56%, Chi square test of independence,  $\chi^2 = 24.39$ ,  $df = 1$ ,  $p < .001$ ). Choice rates were however not affected by the *price level* (Chi square test of independence,  $\chi^2 = 1.84$ ,  $df = 1$ ,  $p > .05$ ).

A 2x2x2 analysis of variance with the *attribute* (hedonic, pragmatic), the *price level* (low, high) and the *actual choice* (neutral and less expensive, better and more expensive) as between-subjects factors, and *choice difficulty* as dependent variable revealed a main effect of *price level*, indicating a higher choice difficulty in the *high price level* condition ( $M = 1.83$ ) compared to the *low price level* condition ( $M = 1.57$ ,  $F(1, 414) = 6.9$ ,  $p < .01$ ,  $\eta^2 = .02$ ). A higher level of expenses generally induced a more detailed and, thus, more difficult choice process. No main effects for *attribute* or *choice* occurred. But as expected, there was a significant, disordinal *attribute x choice* interaction effect (H2a,  $F(1, 414) = 7.68$ ,  $p < .01$ ,  $\eta^2 = .02$ , see Figure 2).

If the *attribute* was beauty, participants who chose the more expensive phone perceived the choice as more difficult than those who chose the less expensive phone, simple effects confirmed this difference to be significant (H2b,  $F(1, 414) = 5.65$ ,  $p < .05$ ). Hence, spending money on beauty was experienced as more problematic than not spending money. In contrast, if the attribute was usability, an opposed tendency was found. Here, the choice was perceived as more difficult by participants who chose *less expensive* phone, i.e., *not* spending money was experienced as more problematic. However, simple effect tests revealed that the difference between choice difficulty ratings within the *pragmatic attribute* condition was only of marginal significance (H2c,  $F(1, 414) = 2.66$ ,  $p < .10$ ). All other main effects and interactions remained insignificant.

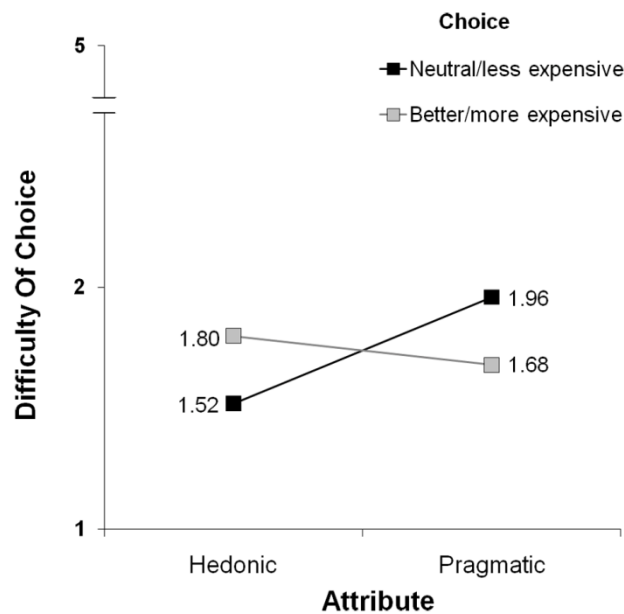


Figure 2: Mean difficulty for either choosing the neutral, less expensive or the better, more expensive phone separately for usability and beauty.

This first study revealed a substantial difference in the way people consider hedonic and pragmatic attributes in a choice situation. For a pragmatic attribute, it appeared to be generally accepted to strive for better quality, and the vast majority was willing to spend an extra 50% on it. For a hedonic attribute, only about half of the participants chose to pay for better quality. Moreover, paying for a hedonic attribute was experienced as more difficult than not paying for it, even though this implied lower quality. The asymmetric choice pattern suggests that the differences in justifiability between hedonic attributes and pragmatic attributes reported for consumer goods do exist in interactive products just as well.

## **5.2. STUDY 2: HEDONIC ATTRIBUTES AS (SECRET) CHOICE FACTOR**

### *5.2.1. Hypotheses and Procedure*

Study 2 further explored differences in justifiability between hedonic attributes and pragmatic attributes of interactive products. The hedonic dilemma assumes that people actually appreciate hedonic attributes, but discount them in choice situations, due to their lacking justifiability. If, however, there was a possibility to circumvent the problem of justification, people should readily consider hedonic attributes for choice. To test this assumption, I created a choice scenario in which a product offered some pragmatic benefits on top of hedonic benefits. Even if those benefits were only minor, they could be used as a justification—even if one's choice was originally based on hedonic rather than pragmatic benefits. In contrast to Study 1, where a surplus in hedonic quality was charged, the choice scenario in Study 2 offered hedonic quality for free.

Just like in the first study, the choice scenario required choosing between two mobile phones, pragmatic quality was operationalized through usability and hedonic quality was operationalized through beauty. This time, however, differences in beauty were not described but manipulated by the visual presentation of the phones. The pictures showed phones from the same brand (which was actually removed), of the same price range and released at about the same time. Pictures were further edited to remove any indications of additional features such as a camera. Figure 3 shows the two phones for choice. Phone A is generally judged to be more beautiful than phone B. This difference in beauty was confirmed in a pre-test with 277 participants (see Hochsattel, 2009). Participants rated the beauty of both phones on a scale from 0 (= not beautiful) to 7 (= very beautiful). A highly significant difference in beauty emerged (phone A:  $M = 5.3$ ,  $SD = 1.6$ ; phone B:  $M = 3.9$ ,  $SD = 1.7$ ,  $t(276) = 11.0$ ,  $p < .001$ ,  $d = .84$ ). Beauty served as the operationalization of the broad notion of hedonic quality, with Phone A being more hedonic than phone B. Unlike in Study 1, differences in hedonic quality



(here: beauty) were not explicitly mentioned, but were only implicitly suggested through the pictures of the phones.



Figure 3: Mobile phones. A is more beautiful (i.e., more hedonic) than B (i.e., less hedonic)

In addition to the pictures, participants were given a description of each phone, which was introduced as the result of a customer survey. Both phones were described as good, but having a single usability problem. For the one phone, this was that "some customers complained that keys are a bit too small and sometimes difficult to press" (bad keys). For the other phone, this was that "some customers complained that letters are a bit too small and difficult to read in some menus" (bad lettering). For half of the participants *bad keys* were matched with the more beautiful phone (A) and *bad lettering* with the less beautiful phone (B). For the other half of participants the matching was reversed. The *matching* of the usability problems with the phones (more beautiful and bad keys, more beautiful and bad lettering) thus built a between-subjects factor. If participants would actually make their choice on the basis of usability rather than beauty, differences in choice rates for *bad keys* versus *bad lettering* would emerge and—by the cross-matching with beauty—both models, the beautiful and the

less beautiful, would be chosen with the same frequency. However, assuming that people desire the hedonic, I expected the more beautiful phone to be generally chosen more frequently (H1). By randomly assigning participants to one of both conditions, it could be ascertained that any observed preference for phone A (more beautiful) over phone B (less beautiful) would be due to the difference in beauty and not due to differences in the acceptability of the two usability problems. Moreover, I expected that the nature of the respective usability problems, i.e., the factor *matching*, will take no effect on choice (otherwise the usability problems would differ in severity, H2). Overall, I thus expected the hedonic attribute beauty to be more deciding for choice than the respective phones' pragmatic attributes.

The present choice scenario did not require a tradeoff between hedonic and pragmatic attributes: both alternatives had their respective usability problem, but one phone was still more beautiful than the other. Thus, choosing the more beautiful would be just reasonable (if one appreciates beauty). Considering that both usability problems were described as minor and only experienced by some customers, it appears quite implausible to state those minor problems as a driver of choice. But even if people might *choose based on hedonic attributes*, they could nevertheless use pragmatic attributes as a "functional alibi", i.e. *justify their choice by pragmatic attributes* (see Keinan et al., 2009). I thus expected that when asked to justify their choice, those who chose the more hedonic phone will declare that pragmatic attributes were (at least partially) decisive, rather than referring to hedonic attributes alone (H3).

Just like in the previous study data was collected online (in German). Again, the link was distributed via students' unions of German-speaking universities. 134 of the 140 individuals who started the study completed it as well (96% retention rate). Participants (N = 134, 90 female, mean age = 24 years, min = 19, max = 50) were randomly assigned to the two *matching* conditions. The cover story asked participants to imagine that their phone just got broken, but luckily, their phone provider assisted them with the free choice between two new models. Thus, in contrast to the previous

study, price did even play a lesser role here. After they had made their choice, participants were asked to justify their choice in an open question format.

### 5.2.2. *Results and Discussion*

As expected (H1), the more hedonic phone was chosen significantly more frequently (67%) than the less hedonic (33%), Chi square test for uniform distribution,  $\chi^2 = 15.8$ ,  $df = 1$ ,  $p < .001$ . Hedonic quality was thus decisive for choice. If participants had ignored hedonic quality, the choice rates for the two phones should have been close to 50:50. Pragmatic quality, in contrast, was not decisive for choice. As expected in H2, the choice rates did not depend on the respective usability problem (bad keys: 46%, bad lettering: 54%, Chi square test for uniform distribution,  $\chi^2 = 0.8$ ,  $df = 1$ ,  $p > .05$ ). Hence, regardless of whether bad keys or bad lettering were matched to the more beautiful phone, the more beautiful phone was chosen more frequently. It thus can be assumed that for a large part of those who chose the more hedonic phone, hedonic quality *was* actually decisive, not pragmatic quality. However, the interesting question was whether participants who chose the more hedonic phone will provide an according justification. Will participants readily affirm that they made their choice based on beauty, because both alternatives had a comparable, minor usability problem? Or will participants who chose the more beautiful nevertheless refer to usability, i.e., the fact that they wanted to avoid a particular (minor) usability problem? Seven participants stated that there was no particular reason for their choice or named other, unrelated reasons (e.g., "It looks similar to my old phone"). These statements were excluded from further analysis. The remaining justifications provided for choosing the more hedonic phone were categorized as mentioning "solely hedonic attributes", "solely pragmatic attributes", or "pragmatic and other attributes". Regarding the latter category, participants often referred to hedonic attributes as well, but emphasized the pragmatic to be deciding (see Table 3 for sample statements within the different categories of justification).

Table 3: Justifications stated for choosing the more hedonic phone

| Justification                  | %   | Sample statements   |
|--------------------------------|-----|---|
| Solely hedonic attributes      | 38% | <p>It is more beautiful.</p> <p>Its visual appearance was more appealing to me.</p> <p>It looks more elegant.</p> <p>I liked the design better.</p> <p>Its design looks more modern</p> <p>The pleasing color and the straight-line form.</p>   |
| Solely pragmatic attributes    | 26% | <p>Small keys can be extremely time-consuming when typing an SMS.</p> <p>Small keys cut down the exchange of information, but small lettering is no problem.</p> <p>More functional keys.</p> <p>Small lettering is more severe than having to press keys repeatedly.</p> <p>I have bad eyes and thus cannot cope with the small lettering. But I have small fingers, so I can easily cope with the key difficulties.</p> <p>Small keys constituted the lesser evil.</p>  |
| Pragmatic and other attributes | 36% | <p>Bad keys are a more severe drawback than display deficits, since I have good eyes and like quick SMS typing. Besides, the phone was visually more appealing.</p> <p>Small keys are extremely annoying, especially when wearing gloves in winter. Moreover, I liked the design better.</p> <p>I like blind typing and will definitely be annoyed by sticky keys. But I don't need a good display. Moreover, the phone is more beautiful.</p> <p>Good readability of lettering is very important. And I like its visual appearance.</p> <p>Display quality is more important than keys. And it looks more novel.</p> |

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Note that within the present scenario, it was not even "irrational" to name hedonic attributes as a reason for choice. Since both phones had their respective pragmatic problems, it was only reasonable to shift the focus on hedonic attributes. However, the majority of those who chose the more hedonic phone acknowledged pragmatic reasons as fully or partially decisive (62%), rather than hedonic attributes alone (38%, H3, Chi square test for uniform distribution,  $\chi^2 = 4.2$ ,  $df = 1$ ,  $p < .05$ ). Admittedly, a large part of those who referred to pragmatic attributes, acknowledged hedonic attributes as well, and 38% frankly revealed the relevance of the hedonic alone. This is not too surprising, since the present choice scenario did not require a trade-off between hedonic and pragmatic attributes. In a way, it even suggested the prior consideration of hedonic attributes, since there was no clear-cut difference in pragmatic quality between the phones. *Both* phones had their respective usability problems. Moreover, both phones' problems were only minor and of about equal severity. Accordingly, choice rates revealed usability problems to be negligible, i.e., there was no effect of the factor *matching*. From this perspective, it is remarkable that 62% of those who chose the more hedonic nevertheless emphasized the pragmatic (26% even declared it to be the only reason choice). Typically, participants described the (minor) usability problem of the other (less hedonic) phone as totally unacceptable, but interpreted the usability problem of the chosen (more hedonic) phone as manageable. Obviously, pragmatic attributes were perceived to be the more appropriate justification.

All in all, the justifications provided again highlighted the difficulty of justifying hedonic attributes. The significant effect on choice rates, however, demonstrated hedonic attributes to be relevant to people. In contrast to Study 1, where a surplus in hedonic quality was charged (and a considerable part of participants was not willing to pay that surcharge), the present study offered hedonic quality "for free": it provided a perfect opportunity to satisfy the desire for the hedonic, but to substantiate this choice with "legitimate", pragmatic reasons.

### **5.3. STUDY 3: PRODUCT CHOICE, NEED FOR JUSTIFICATION, AND POSITIVE AFFECT**

#### *5.3.1. Hypotheses And Procedure*

Study 3 explored the relation between need for justification and product choice and differences in affective consequences of pragmatic versus hedonic choice. Participants were confronted with the choice between a primarily hedonic and a primarily pragmatic product. Given that the justifiability of pragmatic attributes is higher than that of hedonic attributes, a more frequent choice of the pragmatic over the hedonic product was expected (H1). However, I assumed this seeming preference for the pragmatic to be the consequence of participants' perceived need for justification rather than a "true" preference. Accordingly, participants who chose the pragmatic were expected to report a higher perceived need for justification (H2) but to be less happy with their choice, i.e., they will report less positive post-choice affect (H3).

The study was conducted online and the link was distributed via students' unions of German-speaking universities. In the present study, 118 of the 160 individuals who started the study completed it as well (74% retention rate). Those were included in the final sample (N = 118, 85 female, mean age = 24 years, min = 18, max = 41). The choice scenario asked participants to imagine having just closed a mobile phone contract. This contract allowed participants to choose a complimentary phone, out of a set of four (see Figure 4). Again, differences in beauty were validated by a pretest (see Heuchert, 2009). The four phones were selected from a pool of ten, which participants (N = 223) were asked to put in a ranking order, according to their beauty. A and B were considered the most beautiful phones, A: mean rank = 2.62, 95% CI [2.35, 2.89]; B: mean rank = 3.72, 95% CI [3.41, 4.03], whereas C and D were considered the least beautiful phones, C: mean rank = 7.58, 95% CI [7.08, 7.74]; D: mean rank = 7.6, 95% CI [7.25, 7.91].

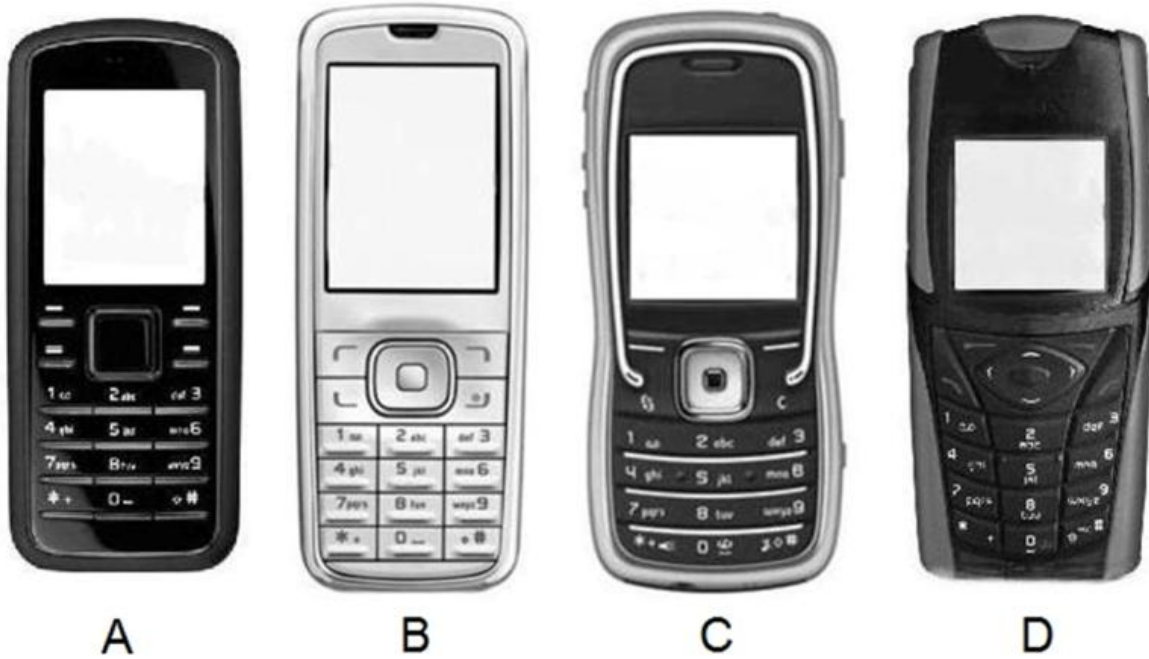


Figure 4: Mobile phones. A and B are the most beautiful (i.e., the most hedonic), C and D the least beautiful (i.e., the least hedonic)

Pragmatic quality was manipulated by providing explicit usability ratings, presented as the result of a "customer survey." The ratings had different ranges, however, the median rating was always lower for the more beautiful phones (A/B: 7 of 15 points) than for the less beautiful phones (C/D: 9 of 15 points). As a consequence, A/B were predominantly hedonic (higher beauty but lower usability) and C/D were predominantly pragmatic (higher usability but lower beauty). Participants' choice thus required a tradeoff between hedonic and pragmatic attributes.

Participants made their choice (i.e., picked one phone out of four) and were then asked to rate their perceived need for justification in the present choice situation on a five-point-scale, ranging from "justification was irrelevant" to "justification was highly relevant". They were further asked to vividly imagine the situation of receiving the chosen phone and to rate their overall affective experience with the help of the *Positive and Negative Affect Schedule* (PANAS, Watson, Clark, & Tellegen, 1988). PANAS is a widely used questionnaire, which measures positive affect (PA) and negative affect (NA) by verbal descriptors of different affective experiences. Its short

form (Mackinnon et al., 1999) consists of ten items: *alert*, *determined*, *enthusiastic*, *excited*, and *inspired* for positive affect, and *afraid*, *distressed*, *nervous*, *scared*, and *upset* for negative affect. Participants indicated the intensity of each particular facet of affective experience on a five-point scale, ranging from "not at all" to "extremely". PANAS can assess affect within shorter and longer time frames (e.g., "today", "during the past weeks") by different temporal instructions. In the present study, we used the "momentary" affect instruction (i.e., "right now"), recommended to assess relatively short-term fluctuations in affect (Watson & Clark, 1999). Several validation studies (Watson & Clark, 1999) demonstrated PANAS to be sensitive to short-term changes in internal or external circumstances, which makes it appropriate to assess momentary affect. PANAS assumes a hierarchical structure (Watson & Tellegen, 1985), with two broad factors capturing the valence of affect (positive, negative). Scale values for positive and negative affect were calculated by averaging the respective items. In the present study, the internal consistency of positive and negative affect was satisfying (Cronbach's Alpha positive affect: .82; negative affect .71). Both scales were uncorrelated ( $r = .01, p > .05$ ).

### 5.3.2. Results and Discussion

As expected (H1), the primarily pragmatic phones (C/D) were chosen significantly more often (81 of 118, 69%) than the primarily hedonic phones (A/B, Chi square test for uniform distribution,  $\chi^2 = 16.41, p < .001$ ). Moreover (H2), participants who chose a primarily pragmatic phone reported a significantly higher perceived need for justification ( $M = 3.30$ ) compared to those who chose a primarily hedonic phone ( $M = 2.68, t(116) = 2.56, p < .05, d = .52$ ). However, even participants with a high need for justification may have had a "hidden passion" for the hedonic product but simply could not choose accordingly. This dilemma—not choosing what one prefers, because of justification—became apparent in positive affect after choice. As expected (H3), positive affect was more pronounced for participants who chose a primarily hedonic phone ( $M = 2.91$ ) than for those who chose a primarily pragmatic phone ( $M = 2.59$ ,



$t(116) = 1.99, p < .05, d = .39$ ). No significant differences emerged for negative affect (hedonic:  $M = 1.32$ , pragmatic:  $M = 1.41, t(116) = 1.07, p > .05, d = .19$ ). However, one could argue that reasoning about justification (which was more pronounced among those who chose the pragmatic) rather than our assumed implicit dissatisfaction with the chosen product may have dampened positive affect, and then resulted in a spurious correlation between positive affect and choice. But this was not the case. There was no significant correlation between perceived need for justification and positive affect ( $r = .02, p > .05$ ), and the significant correlation between positive affect and hedonic choice ( $r = .18, p < .05$ ) remained stable when controlling for justification (partial  $r = .19, p < .05$ ). In other words, the reduction of positive affect among participants who chose the pragmatic is not a consequence of justification *per se*, but of the resulting choice. Participants who "privately" preferred a primarily hedonic phone but nevertheless chose a pragmatic phone were simply not as happy about the product as those who followed their "true" preferences.

## **5.4. STUDY 4: AFFECTIVE REACTIONS TO AN INVOLUNTARY CHANGE**

### *5.4.1. Hypotheses And Procedure*

Study 4 further explored the notion that people tend to choose the pragmatic, because of justification, although they actually prefer the hedonic. Again, the study was conducted online and a link was distributed via students' unions of German-speaking universities: 125 of 172 (73%) completed the whole survey and constituted the final sample (N = 125, 73 female, mean age = 25 years, min = 19, max = 52). The scenario was similar to Study 3. Participants were confronted with a hypothetical choice scenario which required a tradeoff between a primarily hedonic and primarily pragmatic mobile phone. More specifically, they were asked to imagine having just renewed their mobile phone contract, which allowed them to pick a complimentary phone. In the present study, only two alternative phones were presented. Both were described by a "test report" only, i.e., no pictures of phones were provided. The "test report" summarized an expert team's judgments on a 20-point scale on two pragmatic ("practicality", "technology") and two hedonic attributes ("visual appearance", "innovativeness"). In addition to the ratings, there was a short description of each attribute, such as "Visual Appearance refers to issues such as style, color and form". The primarily hedonic phone had a median rating of twelve (of 20) on the hedonic attributes and median value of eight (of 20) on the pragmatic attributes. For the other, primarily pragmatic phone, median ratings were reversed.

Participants made their choice (i.e., picked one phone out of two) and were then asked to provide reasons for their choice, in an open question on the subsequent web page. Subsequently, all participants were told that unfortunately, their original choice was no longer available and that they would receive the other phone instead. To assure that participants were aware of the characteristics of this phone, we once again confronted them with the results of the "test report". Again, participants had to vividly imagine the situation of receiving the (here: non-chosen) phone and to rate their affective

experience with the help of the *Positive and Negative Affect Schedule* (PANAS, Watson et al., 1988). In the present study, the internal consistency of positive and negative affect was again satisfying (Cronbach's Alpha positive affect: .83; negative affect .78). Both scales were slightly correlated ( $r = .27, p < .01$ ). However, internal consistency clearly exceeded inter-scale correlation.

In accordance with the previous study, I expected a more frequent choice of the primarily pragmatic phone compared to the primarily hedonic phone (H1). Assuming that a considerable number of participants will choose the pragmatic just because of their need for justification, I expected different affective responses to the involuntary change of phones. Participants who chose the primarily hedonic phone, based on a true desire, may be truly disappointed about the change. But participants who chose the primarily pragmatic phone, because of justification, may feel more positive about the change. By the change of phones, they may finally get what they desired in private, i.e., the primarily hedonic phone. However, the change of phones is beyond their control, which circumvents justification. These different affective reactions will result in a disordinal interaction between the chosen product (primarily hedonic, primarily pragmatic) and the valence of affect (positive, negative) on the intensity of affect (H2a). More specifically, I expected that for participants who changed from hedonic to pragmatic, negative affect will outweigh positive affect (H2b). In contrast, for participants who changed from pragmatic to hedonic, positive affect will outweigh negative affect (H2c), even though they did not receive the phone they had originally chosen.

#### 5.4.2. *Results and Discussion*

As expected (H1), there was a clear preference for the primarily pragmatic phone: 103 of 125 participants (82%) made a primarily pragmatic choice (Chi square test for uniform distribution,  $\chi^2 = 52.48, p < .001$ ). A content analysis of participants' reasons for choice showed that—quite naturally—all participants mentioned the chosen phones' benefits (i.e., attributes with a high expert rating). About half of the

participants (54%) also mentioned attributes of the rejected phone, which were in general regarded as less important. Interestingly, the general line of reasoning differed depending on whether the choice was primarily hedonic or primarily pragmatic. Participants with the primarily hedonic choice, mentioned and "admitted" that the pragmatic attribute values below average could be a problem, which, however, they hoped to manage (e.g., "I think I could rather adapt to usability drawbacks than to an ugly appearance."). In contrast, participants who chose the primarily pragmatic did not voice any doubts about the low hedonic attribute values. A considerable part of those who chose the primarily pragmatic product (41%) not only declared pragmatic attributes to be more important but also actively discounted the hedonic (e.g., "I don't give a damn about beauty", "A mobile phone is an object of utility...I don't care for superfluous gimmicks!"). However, that this bold renunciation might rather be a way to come to terms with one's own choice than a true detest of the hedonic. In line with this reasoning, an analysis of variance with *change* (from hedonic to pragmatic, from pragmatic to hedonic) as between-subjects factor, *valence of affect* (positive, negative) as within-subjects factor and *intensity of affect* as dependent variable revealed a significant, disordinal *change x valence of affect* interaction (H2a,  $F(1, 123) = 7.93, p < .01, \eta^2 = .06$ , see Figure 5). No significant main effects occurred.

Simple effect tests revealed no significant difference between positive and negative affect for participants who had to change from the hedonic to the pragmatic ( $F < 1$ , see Figure 5, left). This indicates neutral rather than clearly negative affect. H2b was thus not confirmed. But as expected (H2c), participants who changed from the pragmatic to the hedonic reported a significantly higher intensity of positive compared to negative affect ( $F(1, 123) = 22.25, p < .01$ , see Figure 5, right).

Although they had to change an option they initially discounted, they still felt more positive than negative. This indicates that the forced change was a welcome opportunity to receive what they actually desired. But given the free choice, they did not choose what they expected to make them happy. This is in line with Hsee and Hastie (2006), who obtained similar results and consequently call into question

people's ability to make choices in their own interest. The present findings thus suggest that people do not suffer from a lack of ability to identify the most satisfying option. It is the need to justify their choice, which prevents them from choosing according to their true interest.

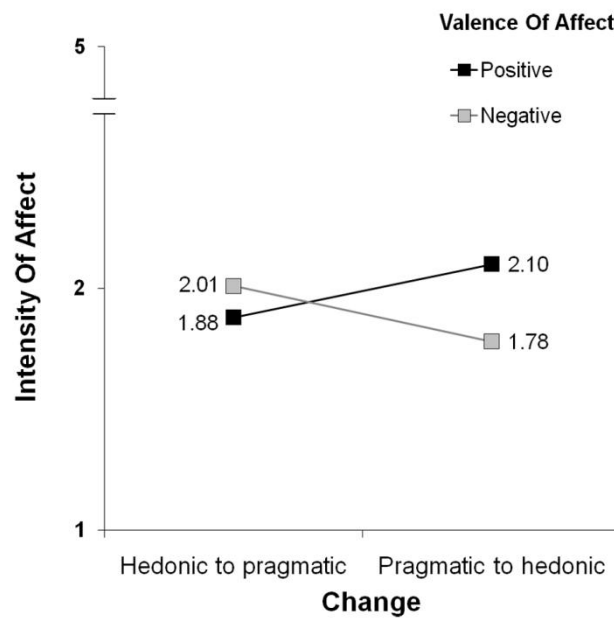


Figure 5: Intensity of positive and negative affect as a function of change.

### 5.5. SUMMARY

The studies in the present chapter demonstrated the existence and relevance of a hedonic dilemma in the context of interactive products, and moreover pointed out justification as an important underlying factor. Study 1 revealed a reluctance to pay for a hedonic attribute (here: beauty). However, the very same attribute was identified as crucial for preference formation in Study 2. Nevertheless, participants who then chose the more hedonic phone still justified their choice by referring to marginal advantages in pragmatic attributes. I suggest that this preference shift revealed a basic preference for the hedonic, which, however, is overridden in situations which require justification. This interpretation was further validated by Study 3 and Study 4: The higher the perceived need for justification, the more likely was a pragmatic choice (Study 3). But while participants predominantly chose the primarily pragmatic product, the prospect of receiving a primarily hedonic product resulted in more positive affect (Study 3, Study 4)—even if one's original choice was pragmatic, and the change to the hedonic was forced (Study 4). While there are certainly people who are "true" supporters of the primarily pragmatic, at least some of the participants who seemingly favored the primarily pragmatic, actually wanted the primarily hedonic. This supports the notion that due to the need for justification, people do not necessarily base their choices on their "true" preferences.

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## 6. WAYS OUT OF THE HEDONIC DILEMMA

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While the previous studies showed up the hedonic dilemma as a phenomenon and explored underlying mechanisms, the studies in the present chapter test exemplary ways how to reduce the dilemma. Assuming that the dilemma is triggered by justification, variations in justification should also lead to a relative increase or reduction of the dilemma. A series of three studies explored different ways to reduce the dilemma by facilitating hedonic choice through a manipulation of justification (in a between-subjects design). As outlined previously, both factors that potentially prevent a choice based on true preferences, i.e., the *justifiability* of choice and the *need for justification*, form a possible starting point to reduce the dilemma (see Chapter 4). Study 5 manipulated the respective *justifiability of hedonic and pragmatic choice* through ambiguous product information. Here, the wide scope of interpretation allowed for justifying a choice in accordance with true preferences. Study 6 strategy specifically manipulated the *justifiability of hedonic choice*. This was achieved by additional information about the product, which let a hedonic choice appear as legitimate. Study 7 manipulated the general *need for justification* through variations in the choice context. All three studies demonstrated a preference shift to the hedonic under facilitated conditions for justification.

## 6.1. STUDY 5: MANIPULATING JUSTIFIABILITY BY ELASTIC PRODUCT INFORMATION

### 6.1.1. Hypotheses and Procedure

Previous studies revealed that people may hesitate to choose the hedonic although they actually appreciate it, due to a lack in justifiability. The present study tested whether an experimentally enhanced justifiability of choice would—compared to a control condition—encourage a higher rate of hedonic choice and thus reduce the dilemma. I thus studied choice between a predominantly hedonic and a predominantly pragmatic option, and the justifiability manipulation either enhanced justifiability of the hedonic option or of the pragmatic option. Altogether, there were thus three levels of the between-subjects factor *justifiability of choice* (control, high justifiability of hedonic choice, high justifiability of pragmatic choice). I expected a higher rate of hedonic choice in the *high justifiability of hedonic choice* condition compared to the *control* condition (H1). However, assuming that the justifiability of pragmatic choice is high *per se*, I did not expect any effect in the *high justifiability of pragmatic choice* condition. Accordingly, no differences in choice rates between the *high justifiability of pragmatic choice* condition and the *control* condition were expected (H2). However, I included a *high justifiability of pragmatic choice* condition to check the assumed differential effect of justifiability for hedonic and pragmatic choice.

Justifiability of choice was manipulated by so called "elastic" information (Hsee, 1995). This means, information is presented as a range of possible values with a high variety. In the present study, this was a "customer survey" with a high variety of customers' judgments regarding pragmatic quality. Such ambiguous information left room for interpretation and adjustment. A pessimistic interpretation of elastic information, i.e., assuming that the "true" value will be at the bottom of the possible range rather than at the top of the possible range, enhanced the relative justifiability of the other option, which had a "safe" (i.e., non-elastic) value of pragmatic quality. If, for example, one phone has good product but average pragmatic quality and the other



has average hedonic but ambiguous pragmatic quality (e.g., some customers gave high ratings, some gave quite low ratings) choosing the hedonic is easy to justify: just assume that the latter will be only of average or even inferior pragmatic quality. Taking the safe option, with unambiguous pragmatic quality, would also more justifiable from the psychological perspective of ambiguity and uncertainty aversion (e.g., Epstein, 1999). Especially in the domain of interactive products with a traditional focus on task-fulfillment, one might feel an urge to assure a certain minimum level of pragmatic quality, as provided by the unambiguous option. Moreover, the choice of the non-elastic option bears no risk of disappointed. Moreover, one would never find out about the "true" value of the elastic, non-chosen option, which prevents the feeling of regret about having missed the best choice. The justifiability of a particular option was thus enhanced by ambiguous information on the other option. In the *high justifiability of hedonic choice* condition the elastic information pertained to the pragmatic option, and in the *high justifiability of pragmatic choice* condition the elastic information pertained to the hedonic option.

The study was conducted online and a link was distributed via the students' unions of German-speaking universities. 129 of 134 (87%) who started the survey completed it as well and constituted the final sample (N = 129, 64 female, mean age = 24.4 years, min = 19, max = 42). The choice scenario asked participants to imagine having just closed a mobile phone contract. This contract allowed participants to choose between two complimentary phones. Information about the two available models was presented as the result of a consumer survey. Here, each phone was described by a number of ratings on different attributes given on a 15-point-scale (1 = very bad, 15 = very good) and presented as a range, indicating the variety of customers' judgments. Actually, both phones differed only in two attributes: one hedonic ("design/appearance/beauty") and one pragmatic ("menu/navigation") attribute. The median of the range for the hedonic attribute was 9 for phone A but 7 for phone B. In contrast, the median of the range for the pragmatic attribute was 9 for phone B but 7 for phone A. Thus, phone A was primarily hedonic, and phone B primarily pragmatic.

Essentially, the content of pure information was the same in all three *justifiability of choice* conditions, since the respective median values of the customers' judgments remained constant. The distinctive factor was the *width* of the reported range of ratings on pragmatic quality (see Table 4).

Table 4: Attribute values of phone A and B within the different justifiability of choice conditions.

| Condition                               | Attribute | Phone           |                 |
|---|-----------|-----------------|-----------------|
|   |           | A (Hedonic)     | B (Pragmatic)   |
| Control                                 | Hedonic   | 8-10 (9)        | 6-8 (7)         |
|   | Pragmatic | 6-8 (7)         | 8-10 (9)        |
| High justifiability of hedonic choice   | Hedonic   | 8-10 (9)        | 6-8 (7)         |
|   | Pragmatic | 6-8 (7)         | <b>3-15 (9)</b> |
| High justifiability of pragmatic choice | Hedonic   | 8-10 (9)        | 6-8 (7)         |
|   | Pragmatic | <b>1-13 (7)</b> | 8-10 (9)        |

*Note.* Median values in brackets. Wide ranges are in bold.

In the *control* condition both phones were described by narrow ranges of customer judgments, varying by only two points. Here, the tradeoff between hedonic and pragmatic quality was obvious. Taking phone A, the more hedonic, though definitely knowing that phone B would be superior in pragmatic quality, was hardly justifiable. In the *high justifiability of hedonic choice* condition, information on the pragmatic attribute value of phone B was given as a wide range, varying by twelve scale points. Here, participants could speculate that the pragmatic attribute value of phone B was on par with or even inferior to that of phone A. The elastic information could be reinterpreted in line with a "true" preference for the primarily hedonic phone. In the *high justifiability of pragmatic choice* condition, information on pragmatic quality of phone A was given as a wide range, varying by twelve points. Note, however, that median values remained the same in all conditions, i.e., phone A had always higher median values in hedonic attributes and phone B had always higher median values in pragmatic attributes.

## 6.1.2. Results and Discussion

Figure 6 shows the respective choice rates for the hedonic and pragmatic phone in the three experimental conditions. As expected (H1), there was a significant increase of hedonic choice in the *high justifiability of hedonic choice* condition compared to the *control* condition (Chi square test of independence with *high justifiability of hedonic choice* and *control* condition,  $\chi^2 = 5.24$ ,  $df = 1$ ,  $p < .05$ ).

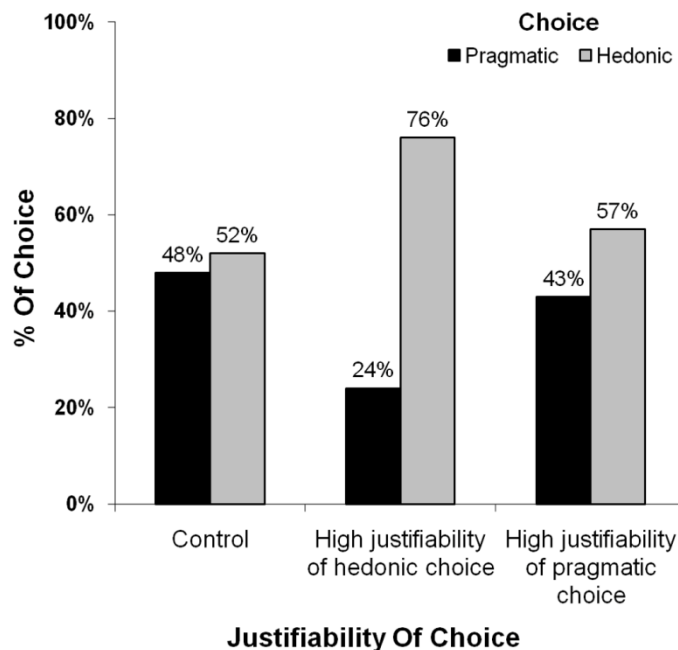


Figure 6: Hedonic and pragmatic choice rates as a function of justifiability of choice.

No significant difference in choice between the *control* and the *high justifiability of pragmatic choice* condition emerged (H2, Chi square test of independence with *high justifiability of pragmatic choice* and *control* condition,  $\chi^2 = 0.23$ ,  $df = 1$ ,  $p > .05$ ). The null effect of an enhanced justifiability of pragmatic choice indicates that the justifiability of pragmatic attributes is high per se. A further enhancement of justifiability was thus no more relevant. Moreover, the enhanced justifiability of pragmatic choice did not provide any meaningful benefit to participants, given that they actually wanted to choose the hedonic. While the previous studies already suggested a true preference for the hedonic, the present study revealed that people

openly show this preference, as soon as there is an opportunity for justification. The present study thus provided a first demonstration of the assumed susceptibility of hedonic choice to variations in the justifiability of choice.

## 6.2. STUDY 6: MANIPULATING JUSTIFIABILITY OF HEDONIC CHOICE BY A LEGITIMATION OF HEDONIC ATTRIBUTES

### 6.2.1. Hypotheses and Procedure

The present study tested a further, more direct manipulation of the justifiability of hedonic choice. The increase of hedonic choice rates in Study 5 already demonstrated that the hedonic dilemma can be solved under conditions of enhanced justifiability of hedonic choice. More specifically, the reinterpretation of elastic information allowed for a devaluation of the pragmatic, which *indirectly* enhanced the justifiability of hedonic. A more *direct* way to solve the hedonic dilemma is letting hedonic attributes appear more legitimate, and thus, enhance the justifiability of hedonic choice. Study 6 tested the impact of an according manipulation. More specifically, I compared choice rates between a predominantly hedonic and a predominantly pragmatic product depending on the experimentally induced *justifiability of hedonic choice* (low, high). Based on the previous study, I expected no effects for a manipulation of the justifiability of pragmatic choice, since pragmatic choice is justified per se. Accordingly, the effect of an enhanced justifiability of hedonic choice was set in contrast to a control condition, i.e., a *low justifiability of hedonic choice* condition. However, there was no scenario with an experimentally enhanced justifiability of pragmatic choice.

The study was conducted online and a link was distributed via the students' unions of German-speaking universities. 178 of 205 (87%) individuals completed the survey and constituted the final sample (N = 178, 104 female, mean age = 24, min = 19, max = 35). Participants were asked to choose between a predominantly hedonic and a predominantly pragmatic mobile phone. Differences in hedonic quality were operationalized by differences in beauty, presented through pictures of the phones. Based on the pre-tested pictures used in Study 3, the two phones for choice were phone A (i.e., the most beautiful out of a set of ten, see Figure 4, far left) and phone D (i.e., the least beautiful out of a set of ten, see Figure 4, far right). Differences in

pragmatic quality were operationalized by differences in usability, verbally described by a "test report". In this "test report", phone D was described as "very usable" and phone A as having "some small usability problems". Moreover, both phones were offering basic features, such as a calendar, a calculator, an alarm and good speech and connection quality. Hence, phone A was primarily hedonic and phone D primarily pragmatic. The *justifiability of hedonic choice* (low, high) was manipulated through the reference to beauty in the test report. In the *low justifiability of hedonic choice* condition, the test report was just concerned with all aspects quoted so far. In the *high justifiability of hedonic choice* condition, the test report also discussed the consequences of the two phones' differences in beauty. More specifically, the pragmatic phone's visual appearance was denoted as "out-dated and hardly appealing", and the hedonic phone was described as "an eye-catcher, promising a great experience". Even if the two phones' visual beauty was directly perceivable, an external confirmation of one's own impression was expected to enhance the justifiability of hedonic choice and, thus, reduce the hedonic dilemma. Accordingly, I expected a more frequent choice of the hedonic phone in *high justifiability of hedonic choice* condition compared to the *low justifiability of hedonic choice* condition (H1). Within the *high justifiability of hedonic choice* condition, I expected a more frequent choice of the hedonic over the pragmatic phone (H2). However, within a standard choice situation, i.e., in the *low justifiability of hedonic choice* condition, I expected a more frequent choice of the pragmatic over the hedonic phone (H3). While the reference to beauty in the test reports was intended to enhance the justifiability of hedonic choice, our intention was not to change the impression of the phones themselves, i.e., the "experiential value" that participants assigned to the phones. If the latter was the case, an enhanced number of hedonic choices in the *high* compared to the *low justifiability of hedonic choice* condition could be a priming effect rather than an effect of increased justifiability. To ascertain that this was not the case, participants' expectations regarding the experiential quality of the two phones were surveyed as well. Participants indicated how good they expected to feel with each phone on a five-point-scale, ranging from "not at all" to "extremely." Unlike in the previous studies,

where affect related to the hedonic and pragmatic phone was compared *between* subjects, each participant was asked for ratings on both phones (i.e., *within* subjects). I assumed the perceived experiential value of the phones to be independent from the justifiability manipulation, i.e., there will be no differences in the respective experience ratings (for the hedonic phone, for the pragmatic phone) between the *low* and the *high justifiability of choice* condition (H4). However, I expected that participants will give higher ratings to the chosen compared to the non-chosen phone, i.e., participants choosing the hedonic phone will state to feel better with the hedonic compared to the pragmatic phone, and vice versa (H5). Finally, I was interested in whether the experience ratings would turn out differently if surveyed *before* participants knew they had to make a choice. The *time of rating* was thus included as second experimental factor, without a specific hypothesis. This led to a 2 x 2 between-subjects design, varying the *justifiability of hedonic choice* (low, high) and the *time of rating* (before choice, after choice). Participants were randomly assigned to the four experimental conditions.

### 6.2.2. Results and Discussion

As expected, hedonic choice was significantly more frequent in the *high justifiability of hedonic choice* condition compared to the *low justifiability of hedonic choice* condition, (H1), Chi square test of independence,  $\chi^2 = 4.93$ ,  $p < .05$ , see Figure 7. This increase of hedonic choice indicated that the experimentally enhanced justifiability encouraged participants to follow their true preference. Accordingly, in the *high justifiability of hedonic choice* condition, the hedonic phone was chosen more frequently than the pragmatic (H2, Chi square test for uniform distribution,  $\chi^2 = 15.43$ ,  $p < .001$ , see Figure 7, right). In the *low justifiability of hedonic choice* condition, there was a balanced ratio of pragmatic and hedonic choice, although we actually had expected a frequent choice of the pragmatic phone (Chi square test for uniform distribution,  $\chi^2 = 1.06$ ,  $p > .05$ , see Figure 7, left). H3 was thus not supported. A potential explanation is that the tradeoff between hedonic and pragmatic quality might

have not appeared that strong to participants. This could be due to the information on pragmatic quality by verbal descriptions only, which might have already appeared as more ambiguous, compared to the information on pragmatic quality by fixed, numerical values in previous studies. The less explicit tradeoff may have lead to a slightly enhanced justifiability of hedonic choice in the present study—even in the *low justifiability of hedonic choice* condition.

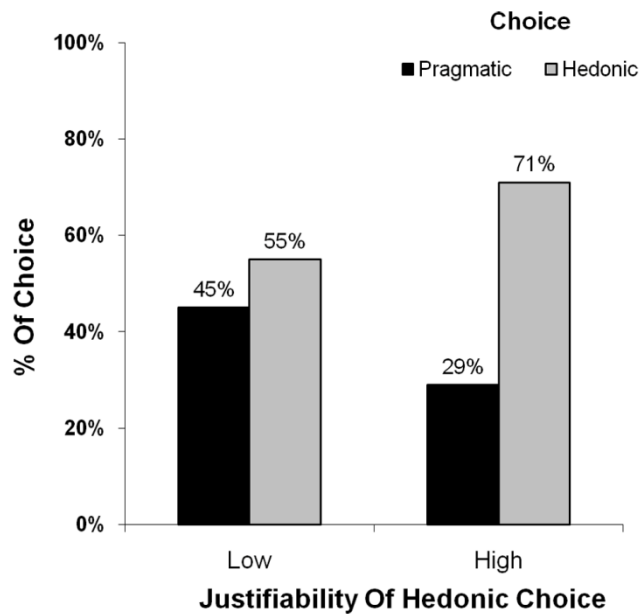


Figure 7: Hedonic and pragmatic choice rates as a function of justifiability of hedonic choice.

A 2x2x2x2 analysis of variance with the *type of experience rating* as within-subjects factor (rating for the hedonic phone, rating for the pragmatic phone), *time of experience rating* (before choice, after choice), *justifiability of hedonic choice* (low, high), *choice* (hedonic, pragmatic) as between-subjects factors, and *experience rating* as dependent variable revealed no significant main effects. There was no interaction between *type of experience rating* and *justifiability of hedonic choice* (H4,  $F(1, 167) = .46, p > .05, \eta^2 = .003$ ). Independent of the way that hedonic attributes were discussed in the test report (i.e., justifiability manipulation) experience ratings remained on a similar level. This applied to the hedonic (low:  $M = 3.08$ , high:  $M = 3.31$ ) and to the pragmatic phone (low:  $M = 2.99$ , high:  $M = 2.96$ ). As expected, the



reference to beauty did not alter the expected experiential value of the phones. Also the expected interaction between *type of experience rating* and *choice* emerged (H5,  $F(1, 167) = 74.82, p < .001, \eta^2 = .31$ ). Simple effect tests revealed that participants who chose the pragmatic phone gave significantly higher ratings to the pragmatic ( $M = 3.54$ ) compared to the hedonic phone ( $M = 2.65, F(1, 167) = 30.48, p < .001$ ). In contrast, participants who chose the hedonic phone gave significantly higher ratings to the hedonic ( $M = 3.44$ ) compared to the pragmatic phone ( $M = 2.77, F(1, 167) = 53.28, p < .001$ ). However, the reported interaction effect was further qualified by a significant three-way interaction between *type of experience rating*, *choice*, and additionally, *time of experience rating* (before choice, after choice),  $F(1, 167) = 4.45, p < .05, \eta^2 = .03$ . In order to test the stability of the assumed interaction effect between *type of experience rating* and *choice* on the specification (H5), separate analyses of variance for the *before choice* condition and the *after choice* condition were calculated. In both conditions, the interaction between *type of experience rating* and *choice* was significant (*before choice* condition;  $F(1, 75) = 59.72, p < .001, \eta^2 = .44$ ; *after choice* condition:  $F(1, 96) = 26.90, p < .001, \eta^2 = .22$ ). The respective simple effect tests confirmed that participants reported the chosen phone as more appealing than the non-chosen phone, irrespective of the *time of experience rating*. Participants who chose the pragmatic phone gave higher ratings to the pragmatic compared to the hedonic phone (*before choice* condition;  $F(1, 75) = 30.89, p < .001$ , see Figure 8, top diagram, right; *after choice* condition:  $F(1, 96) = 6.96, p < .01$ , see Figure 8, bottom diagram, right). Participants who chose the hedonic phone gave higher ratings to the hedonic compared to the pragmatic phone (*before choice* condition;  $F(1, 75) = 30.12, p < .001$ , see Figure 8, top diagram, left; *after choice* condition:  $F(1, 96) = 25.14, p < .001$ , see Figure 8, bottom diagram, left). H5 thus remained supported.

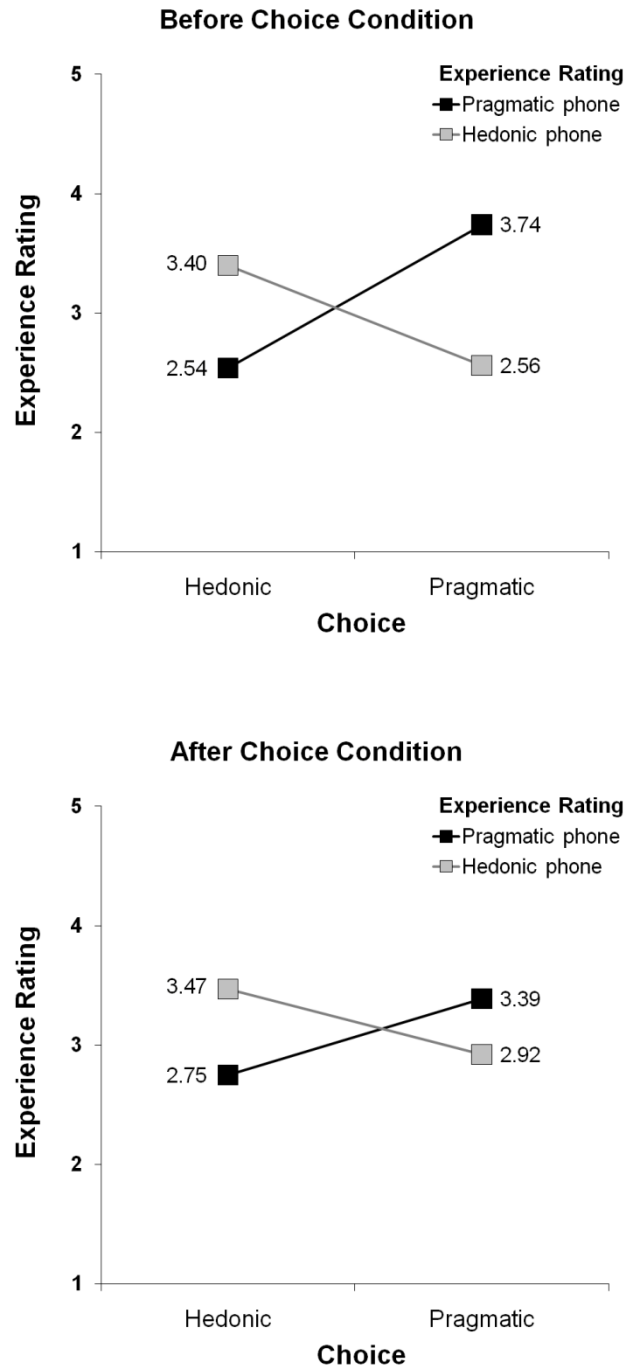


Figure 8: Experience ratings for the pragmatic and hedonic phone as a function of choice in the before choice condition (top) and in the after choice condition (bottom).

The interaction graphs, however, reveal a slight difference in the pattern of ratings between the *before choice* and the *after choice* condition, which led to the significant three-way interaction. In the *before choice* condition, both groups of participants—those who chose the hedonic and those who chose the pragmatic—show an about equally pronounced preference for the chosen phone. In contrast, in the *after choice* condition, the general preference for the chosen phone was less pronounced among participants who chose the pragmatic compared to participants who chose the hedonic phone (this is also indicated by the smaller F-value revealed by simple effects testing).

There are two possible explanations for this finding. First, the affirmation of one's prior choice through (higher) experience ratings could reflect the need for justification associated with that choice. According to the classical phenomenon of post-choice reevaluation, people typically use a reevaluation of the chosen and a devaluation of non-chosen to make their choice appear more justified (Brehm, 1956). Participants who chose the hedonic might be more prone to post-choice reevaluation than participants who chose the pragmatic, due to the per se lower justifiability of hedonic choice. However, the experimentally enhanced justifiability in the *high justifiability of hedonic choice* condition should then reduce the need for post-choice reevaluation. The fact that there is no interaction with *justifiability of hedonic choice* thus rather speaks against this explanation.

A second explanation refers to the experience ratings given by participants who chose the pragmatic phone. The considerable small difference between experience ratings (for the chosen and the non-chosen option) displays a low confidence of their choice, which might reflect their true expectations. *After* they had made their choice, they might have realized that they actually were not convinced of the experiential benefits of the chosen option, and rated in only somewhat higher than the rejected option. In this case, pragmatic choices could have resulted from following norms (e.g., "be rational", "always take the pragmatic") rather than from true conviction. Similar findings are known from consumer research. Amir and Ariely (2007) demonstrated that people rely on rules rather than anticipated consumption utility when making

purchase decisions. Hsee's (1999) studies on prediction-decision inconsistencies showed that post-choice experience ratings don't necessarily match the choice one had just made before. Thus, choosing the pragmatic might not always be a consequence of conscious reasoning but an automatic tendency, based on a deeply ingrained need for rationality and justification.

### **6.3. STUDY 7: MANIPULATING THE NEED FOR JUSTIFICATION BY FRAMING THE CHOICE CONTEXT**

#### *6.3.1. Hypotheses and Procedure*

Study 7 explored a possibility to reduce the general *need for justification*: framing of the choice context. There are a number of reported framing effects regarding hedonic and pragmatic product choice (see Chapter 3.3). However, they often rely on settings different from the situation typical for product acquisition, such as winning products in a raffle (e.g., Böhm & Pfister, 1996; O'Curry & Strahilevitz, 2001). A useful approach for promoting interactive products could be framing product acquisition as a gratification. The gratification frame provides a "reason" for consumption and thus reduces the general need for justification. Such a reduction in the need for justification is considered more relevant for hedonic than for pragmatic products, since the latter don't lack justification anyway. In contrast, "unjustified" hedonic consumption (i.e., without a reason) is assumed to be accompanied by negative affect and strong feelings of guilt—even though empirical reports showed that the actual pleasure derived from hedonic consumption does not depend on whether there is a reason or not (Xu & Schwarz, 2009). This conviction may lead to an unnecessary abdication of the hedonic. Without a reason, people don't dare to choose the hedonic, due to their felt need for justification. But driven by the strong desire for the hedonic, people are constantly seeking for ways to attain a right for hedonic consumption, such as a right for gratification by preceding efforts (Kivetz & Simonson, 2002). To "deserve" a hedonic product, people typically adopt a generous interpretation of what constitutes an "effort". Kivetz and Simonson (2002) demonstrated that the preference for a hedonic option ("a luxurious 1-hour facial cosmetic treatment", "a 1-hour pampering Swedish or Sports massage") compared to a pragmatic option (a voucher of the same monetary value for the local grocery store) increased with the number of purchases required before reward attainment in a customer loyalty program. Purchase was obviously interpreted as "effort", and a high number of purchases entailed the right for

hedonic consumption. Sela and colleagues (2009) further revealed that this effect is independent of actual "effort", it solely depends on whether an activity is declared to be "high effort" or not. Participants made more hedonic choices when a previously solved calculation task was framed as "high effort" compared to when the same task was framed as "low effort". Besides preceding efforts, other socially valued activities (e.g., performing a charitable act) imply a right for gratification, and in turn, hedonic choice (e.g., Strahilevitz & Myers, 1998). Khan and Dhar (2006) showed that hedonic choices yet increased after a task which only required fantasizing about being a helpful person, i.e., making a hypothetical choice between different jobs of community service. Even *thinking* about social activities was sufficient to let hedonic choice appear more justified. Based on these findings, I assumed a gratification framing to reduce the need for justification and, thus, encourage hedonic product choice also in the context of interactive products.

The *need for justification* (low, high) was manipulated by differences in choice context (purchase framed as gratification, standard purchase). (Hypothetical) purchase rates for a predominantly hedonic and a predominantly pragmatic product were compared in a between-subjects design, so that the impact of justification on hedonic and pragmatic product choice could be studied separately. Participants got only one either predominantly hedonic or pragmatic offer, which they could either accept (buy) or reject (not buy). This led to a 2 x 2 between-subjects design, varying the *need for justification* (low – purchase framed as gratification, high – standard purchase) and the *product* (hedonic, pragmatic). The study was conducted online and a link was distributed via the students' unions of German-speaking universities: 133 of 158 (84%) completed the whole survey and constituted the final sample. Participants (N = 133, 50 female, mean age = 24, min = 19, max = 34) were randomly assigned to the four conditions. In all four conditions, participants were presented with an advertisement for a laptop on sale for 749€ instead of 999€. They were asked to imagine that the advertised laptop was superior to their old laptop in technical specification. In addition, participants in the *low need for justification* condition were

told to imagine that "due to the enormous efforts for their exams during the last weeks they deserved a gratification". In the *high need for justification* condition, there was no additional information on one's personal situation. Based on a manipulation introduced and pre-tested by Park and Mowen (2007), the *product* (hedonic, pragmatic) was operationalized by the main usage goals specified in the scenario. In the *hedonic product* condition these were leisure activities such as chatting, listening to music and playing online games. In the *pragmatic product* condition these were working tasks, such as writing reports, statistical analyses or literature research. After having read the scenario, participants were asked whether they would like to buy the laptop or not.

The *need for justification*, operationalized by the gratification framing, was expected to have no significant effect on pragmatic purchase. Due to their relation to the generally accepted goal of task-fulfillment, pragmatic acquisitions are not much concerned by the question of justification. Hedonic acquisitions, in contrast, do not come with an inherent justification, so that differences in the need for justification induced by the context should be relevant. I thus assumed a differential effect of the factor *need for justification* within the two *product* conditions. In the *pragmatic product* condition, I expected no significant differences in purchase rates between the *low* and the *high need for justification* condition (H1). In the *hedonic product* condition, purchase rates were expected to be higher in the *low* compared to the *high need for justification* condition (H2).

### 6.3.2. Results and Discussion

A comparison of purchase rates between the two *need for justification* conditions revealed a general effectiveness of the applied gratification framing: the ratio of purchases to non purchases was significantly higher (57% purchase rate) in the *low need for justification* condition compared to the *high need for justification* condition (39% purchase rate; Chi square test of independence,  $\chi^2 = 4.25$ ,  $p < .05$ ). But as expected, separate analyses within the two *product* conditions revealed a differential

effect of the factor *need for justification*. In the *pragmatic product* condition, purchase rates were independent from the *need for justification* (H1, Chi square test of independence,  $\chi^2 = 0.63$ ,  $p > .05$ , Figure 9, left). In the *hedonic product* condition, purchase rates varied depending on the *need for justification*, i.e., purchase rates were higher in the *low* compared to the *high need for justification* condition (H2, Chi square test of independence,  $\chi^2 = 4.30$ ,  $p < .05$ , Figure 9, right).

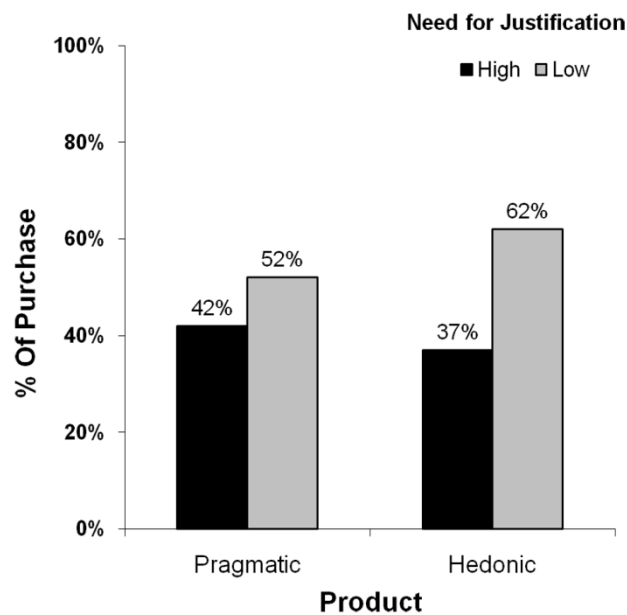


Figure 9: Pragmatic and hedonic purchase rates as a function of need for justification.

The differential effect of gratification framing once more demonstrated the controversial nature of hedonic quality. Note that in the present study, no direct trade-off between the hedonic and pragmatic was required, since hedonic and pragmatic choice were studied separately. Nevertheless, the need for justification, and thus, the dilemma of the hedonic was still apparent. The decision for or against pragmatic product purchase was independent from the contextually induced need for justification. However, a good part of participants could not convince themselves to buy the hedonic, unless the gratification framing eased the need for justification. This



indicates that the primarily hedonic product was certainly appealing to participants. But the link between the existing desire and its reflection in choice rates is fragile and much more susceptible to contextual influencing factors than for primarily pragmatic products.

#### 6.4. SUMMARY

The present studies demonstrated that the hedonic dilemma revealed in the first group of studies (see Chapter 5) can be reduced by taking justification into account. I explored three different ways of reducing the dilemma of the hedonic. I first manipulated the *justifiability of hedonic choice*, by ambiguous product information (Study 5), and by a legitimization in given product information (Study 6). Finally, I manipulated the *need for justification*, by creating a certain choice frame (Study 7). All these manipulations of justification led to a relative increase in hedonic choice rates. Taken together, these studies established the susceptibility of revealed preferences, and emphasized the difficulties of taking revealed preferences as inevitably reflecting true preferences. The present findings suggest justification to be one of the major factors moderating the relationship between true desires and revealed preferences.

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## 7. GENERAL DISCUSSION

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### 7.1. SUMMARY OF RESEARCH FINDINGS

The present studies extended HCI research by a systematic exploration of the consequences of hedonic and pragmatic attributes in choice situations. It was revealed that due to their need for justification, people focus on the justifiability of hedonic and pragmatic attributes, instead of their impact on experience. Consequently, they neglect the hedonic in choice situations. The discovered phenomenon has various practical implications (see Chapter 7.3), and suggests the inclusion of choice situations to be a valid extension of the field of study in HCI. Seven empirical studies explored the notion of a hedonic dilemma in the domain of interactive products.

The first set of studies (Chapter 5) confirmed the hedonic dilemma's core assumptions: people appreciate the hedonic (Study 2) but don't want to "pay" for it, neither with money (Study 1) nor by accepting drawbacks in pragmatic quality (Study 3, Study 4). Individually considered, the reluctance to pay for the hedonic could be easily (mis)interpreted as revealing a disinterest in hedonic attributes of interactive products. But taken together, the present results suggest this superficial disinterest to be the result of a justification process. People actually desire the hedonic, but justification is potentially preventing choice according to true preference. These assumptions were further supported by participants self reports on affect (Study 3, Study 4) and their perceived need for justification (Study 4). Besides an advanced understanding of product attributes and influencing factors in choice situations, these studies indicated justification as a starting point to reduce the dilemma.

The second set of studies (Chapter 6) demonstrated three different ways to reduce the dilemma by manipulating justification, which to some extent could be useful in HCI research or marketing of interactive products (see Chapter 7.3). Study 5 applied a

manipulation of justifiability through ambiguous information on attribute values. Study 6 specifically manipulated the justifiability of hedonic choice by confirming the relevance of hedonic attributes in a "test report". Study 7 manipulated the general need for justification by framing the choice context. All three studies revealed a relative increase in hedonic over pragmatic choice under facilitated conditions for justification. Pragmatic choice, however, was not affected by variations in justifiability or the need for justification. This differential effect underlines the specificity of the dilemma and its link to the hedonic; only for the hedonic, there is a potential gap between justifiability and desire.

A major strength of the present research is the exploration of the hedonic dilemma in various settings, including different modes of preference elicitation, different manipulations of the predominant product character, and—to some extent—different product categories. Hedonic and pragmatic choices were studied in direct as well as indirect comparison, that is, in separate (Study 1, Study 7) and joint choice settings (Study 2, Study 3, Study 4, Study 5, Study 6). Moreover, the exploration of the hedonic dilemma was based on a number of different operationalizations of hedonic and pragmatic quality. Hedonic quality was manipulated by textual information on hedonic attributes (Study 1), by numerical ratings provided in "customer surveys" or "test reports" (Study 4, Study 5), the usage goal (Study 7), and by pre-tested pictures (Study 2, Study 3, Study 6). Pragmatic quality was manipulated by textual information on pragmatic attributes (Study 1, Study 2, Study 6), by numerical ratings provided in "customer surveys" or "test reports" (Study 3, Study 4, Study 5), and the usage goal (Study 7). Though the present studies first focused on one category of interactive products (i.e., mobile phones), Study 7 extended the research to another category (i.e., laptops). The continuous replication emphasized the robustness of the phenomenon. The effect is not tied to a specific setting, and thereby strengthened the proposed theoretical mechanism (i.e., need for justification and an asymmetry in the justifiability of pragmatic and hedonic attributes).

## 7.2. LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

A potential limitation of the present studies is their restriction to hypothetical choice. Studying hypothetical choice is a common practice in marketing research, and it has been repeatedly shown, for example, in research on the *Endowment Effect* (Horowitz & McConnell, 2002), that there is no major difference between hypothetical and real trading. However, a difference between hypothetical and real choice regarding the particular role of justification cannot be completely ruled out. Since hypothetical choices have no real consequences, one could take them *less* seriously, which would lead to a general *decrease* in the need for justification. If so, the present findings actually emphasize the robustness of effects. Any effect found in a hypothetical choice situation should be even stronger when it is about real choice. But it cannot be foreseen how the (presumably higher) need for justification in real choice situations might interact with other potential influencing factors, or whether real choice situations might trigger a slightly different facet of justification (see Chapter 3.1 for a discussion of the various facets and psychological mechanisms behind the need for justification). It thus cannot be said for sure whether the phenomenon revealed in hypothetical choice scenarios will occur in the same way in real choice situations. Consequently, future research on the hedonic dilemma should be extended to real choice situations.

Another critique, to some extent common to most experimental work, is the rather artificial, "made" set-up. The limited information about product attributes (i.e., stimuli) provided to the participants did not mirror the potential complexity of real choice situations. In real life, one may be better able to negotiate between hedonic and pragmatic attributes. In fact, one might even get high quality on both, at least, if money is no object. Furthermore, the reductionist presentation of product information may not live up to the holistic, all encompassing concept of User Experience. Admittedly, the present research only captured a small excerpt of the various factors that potentially influence users' experience. As with most results from experimental studies, the ecological validity of the present findings therefore remains an open

question. Nevertheless, I believe the experimental approach to be a valid starting point. The present studies provided insight into a phenomenon hardly accessible through interviewing or field observation, because of its very nature. By the examination of consequences of variations in specific factors (e.g., degree of hedonic quality, need for justification), the present thesis revealed a mismatch between choice behavior and actual desires that is not necessarily obvious, not even to the participants themselves. Based on the present findings, future research will include more naturalistic and complex settings, also covering a wider range of products, as well as product-centered case studies or real-world enquiries into the tension between what one wants and what one chooses.

Another potential drawback of the present studies is that they did not explore the respective relevance of hedonic and pragmatic attributes while actually *using* a product. However, only the idea that people will be happier with a primarily hedonic product *while product use* turns the focus on the pragmatic in choice situations into a dilemma of the hedonic. Participants' self-reports of affect in Study 3 and Study 4 already lent support to these assumptions. However, future studies need to examine people's feelings related to actual product use later on. Besides laboratory studies, longitudinal (field) studies will help to explore the specific consequences of hedonic and pragmatic choice criteria for the evolution of the user-product relation over time.

Future studies also need to explore effects of person variables. Besides inter-individual differences in the general need for justification, there might be differences in individuals' perceived justifiability of hedonic choice. First indicators of such an effect were already revealed in studies from consumer research. Kivetz and Simonson (2002) reported inter-individual differences in the tendency to feel guilty about hedonic consumption, which also moderated the sensibility to contextual variations in the need for justification. Similarly, Park and Mowen (2007) revealed a moderating role of tightwadism (Mowen, 2000). While the acquisition of a pragmatic product was independent from tightwadism, the acquisition of a hedonic product was significantly lower among individuals high in tightwadism. Moreover, inter-individual differences

in preferences for intuitive versus deliberative decision strategies (Betsch, 2007) may influence whether one considers a choice based on affect-laden, experiential, hedonic attributes as justified or not. The perceived justifiability of hedonic choice may also depend on one's (chronic) regulatory focus (e.g., Higgins, 1998), given that one's view on the appropriateness of choice rationales differs between promotion and prevention focus (e.g., Higgins, 2002, Higgins, Idson, Freitas, Spiegel, & Molden, 2003). Several researchers pointed out that hedonic products fulfill primarily promotion goals (i.e., advancement, aspirations, accomplishments), and pragmatic products fulfill primarily prevention goals (i.e., protection, safety, responsibilities; e.g., Chernev, 2004; Chitturi et al., 2007; Hassenzahl et al., 2008; Shao & Shao, 2011). Accordingly, people high in promotion focus may experience less difficulties to justify the hedonic compared to people high in prevention focus, since a focus on hedonic attributes is in line with the goals of the former.

Finally, the cultural background may shape one's attitude towards hedonic and pragmatic attributes. Tomico, Karapanos, Lévy, Mizutani, and Yamanka (2009) studied cross-cultural differences in product attribute prioritization between Japanese and Dutch designers by applying the Repertory Grid Technique (see Kelly, 1955). For example, Japanese designers more frequently referred to visual aesthetics, whereas Dutch designers more often considered functionalities, but also symbolic qualities (Tomico et al., 2009). These results may not only reflect cultural differences in preferences, but also cultural differences in norms, i.e., what *should* be considered important in product design and choice.

### 7.3. PRACTICAL IMPLICATIONS

The major contribution of the present studies lies in an improved understanding of the hedonic dilemma as a phenomenon and justification as underlying factor. Besides, the studies have direct practical implications for HCI research, design and marketing. First of all, the present findings recommend a certain degree of critical analysis towards studies that ostensibly (and sometimes naively) suggest that people care primarily for the pragmatic, since results could be biased by the ubiquitous power of justification. Given that yet hypothetical choice, obtained in an anonymous online survey, was affected by justification, this effect may be even stronger for user research in face to face settings. Taking justification into account, it is hardly surprising that studies regularly highlight the importance of pragmatic issues and downplay the hedonic (e.g., Helfenstein, 2010)—often meant as a slightly dismissive gesture towards current UX approaches.

A tendency towards the pragmatic in choice situations, due to justification, can be disadvantageous in many respects. As hedonic attributes are directly related to be-goals, and thus close to the user's Self, they are the main drivers of what Belk (1988) calls "emotional product attachment". Of course, a product can also create "functional attachment" through pragmatic quality. But given the enormous availability of products performing the same function, i.e., supporting the same do-goal, this functional attachment may become more and more negligible (Hassenzahl & Roto, 2007). A product only appreciated for its pragmatic benefits, such as a dishwasher, will be replaced without second thoughts. There is no emotional attachment to the particular dishwasher, and probably not even to the brand. A solely function-oriented market, highlighting pragmatic benefits only, seems thus not desirable for companies. From a consumer's perspective, a choice based on pragmatic attributes, while actually favoring a more hedonic product, is obviously a bad start for a fulfilling product relation. In short, customers and vendors of interactive products alike would benefit from a more unbiased, less skeptical consideration of hedonic attributes. From a methodological point of view, justification could interfere with the valid interpretation



of market and user studies. For example, requirements analysis may reveal solely pragmatic user needs, simply due to participants' perceived need for justification induced by the direct probing. Consequentially, study after study will point out a pronounced consumer requirement for the pragmatic. And if taken seriously, the apparent demand for the pragmatic reported in such studies will be reflected in product design as well. This may then result in overly functional products with only a small potential to create the experiential quality so crucial for emotional attachment.

Aside from the problem of justification, particular research methods or study procedures suggest a focus on pragmatic attributes and could thus lead to a bias towards the pragmatic. Standard usability testing, for example, is a valuable procedure to identify barriers to task fulfillment. But at the same time, typical usability questionnaires and the mere task-oriented setting implicitly suggest narrowing the focus on pragmatic and disregarding hedonic attributes. Accordingly, Hassenzahl and Ullrich (2007) found that user comments critically depended on the usage mode, i.e., whether participants had to perform a certain task with the product, or whether they were told to "just explore and have fun with the product". While the former focused on usability issues only, the latter provided a holistic evaluation of the product. The important point is that researchers must be aware of the respective focus that comes along with particular research procedures. If *researchers* are only interested in a products' pragmatic quality, the task-oriented usability testing approach is all fine—as long as they don't jump to the wrong conclusion that *users* are only interested in a products' pragmatic quality. An unbiased exploration of User Experience thus requires a research setting that doesn't take sides but introduces hedonic and pragmatic quality as equally accepted and justified, and leaves it to the participants to place their emphasis.

Beyond research, study results biased by justification are a suboptimal basis for successful product design. Despite being built on latest research findings, overly pragmatic products won't be loved by customers. Designers, in turn, won't understand why users don't appreciate what was built according to their "requirements", and

vendors will ruminate about their disloyal customers. Research-based design is certainly commendable. However, companies will be well advised to regularly challenge the basis of identified "customer needs". For example, any of the justification manipulations specified above (e.g., creating a gratification frame, creating a windfall situation, separate choice setting) could be a means to reduce the bias through justification in market studies. If set in contrast to a standard setting, this would even allow for a direct check of the impact of justification: will revealed preferences remain the same, or will hedonic products suddenly find more approval? Actively taking justification into account is also advisable for marketing campaigns: without the right frame, hedonic expenses lack justification, and customers hesitate to pay for experiential benefits. However, it is precisely this experiential value which enables emotional attachment, brand bonding, and, in the long run, a company's success. Marketing campaigns could solve this dilemma by creating a frame that reduces the problem of justification (e.g., the gratification frame used in Study 7). Just like chocolate and perfume are promoted as something one deserves, like L'Oréal's famous advertising slogan "Because I'm worth it", similar mechanisms might work for advertising interactive products, and provide a possible solution for the difficulties arising from justification.

It becomes clear that there are several intersections between research, design, marketing, and User Experience where justification may exert influence. Accordingly, there is not one crucial maintaining factor that could be blocked to resolve the hedonic dilemma. Nevertheless, this complexity of potential consequences does not entail complete helplessness in the face of the dilemma. The implications discussed above provide some practical suggestions. Moreover, being aware of the potential dilemma and its possible manifestations is already a valuable step, since the need for justification does no longer lead to an unnoticed bias, but can be actively taken into account.

## 7.4. CONCLUSION

The present thesis provided a composite picture of the character of the hedonic. After the long predominance of the pragmatic, the consideration of the hedonic as a second dimension of product quality formed a valuable advancement of previously existing models. This was first acknowledged in consumer research and shortly after adapted in the field of HCI. Researchers and practitioners enthusiastically celebrated the arrival of the hedonic as the true motivator for product interaction. Accordingly, various studies pointed out the prime importance of the hedonic for product experience, and its close relation to the Self and universal human needs.

In choice situations, however, hedonic attributes might raise tensions, due to their seeming irrationality. Consumer researchers recognized this issue. Accordingly, they explored approaches to attenuate these negative associations and make hedonic choice appear more justified. HCI researchers, in contrast, largely neglected the reported difficulties. They seemingly relied on the assumption that users will naturally choose the one product which they like best to use. The present research challenged this view. It was revealed that due to the need for justification, a gap between choice and experience may arise. Seven empirical studies unanimously revealed the same phenomenon, indicating a hedonic dilemma in the domain of interactive products, with far-reaching consequences and challenges for users, designers, researchers, and vendors. More important, the present studies affirmed the irresistible attraction of the hedonic: whenever its choice appears justifiable, users go for it, attracted by its potential for rich (User) experiences.

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# ERKLÄRUNG

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Hiermit erkläre ich, dass ich die vorliegende Arbeit selbständig angefertigt und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt habe.

Ferner erkläre ich, dass ich die hier vorgelegte Dissertation nicht als Prüfungsarbeit für eine staatliche oder andere wissenschaftliche Prüfung eingereicht habe.

Weiterhin erkläre ich, dass ich weder die gleiche noch eine andere Abhandlung bei einer anderen Hochschule als Dissertation eingereicht habe.

Landau, den 23. September 2011

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(Sarah Diefenbach)