

Perceiving Innovations: The Role of Processing Fluency

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St. Gallen, May 13, 2011

The President:

Prof. Dr. Thomas Bieger

To my mother, Oliver, and Emil

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ABSTRACT

Much research has been dedicated to the diffusion of innovations and several authors have emphasized the importance of finding efficient communication strategies for novel products. However, an understanding of individual underlying processes in perceiving innovations remains low. Particularly, most research has focused on the declarative content of ads and on the communication of the actual benefits of a novel product. It seems that literature on innovation diffusion and marketing assumes that consumers are easily able to distinguish whether an unfamiliar product has the actual qualities that make it superior to existing products. However, new product evaluation may in fact hinge on many factors, not all of which have to do with the actual product benefits and qualities. Extant research has not investigated other, rather unconscious, factors that influence new product evaluation and how consumers come to appreciate the innovativeness of novel products.

This dissertation addresses this issue and argues that a potentially relevant literature stream to examine the underlying processes of new product evaluation is research on metacognitive experiences, particularly fluency theory. Fluency describes the ease or difficulty with which stimuli can be accessed, retrieved or processed (Schwarz et al., 1991). In two different experimental settings, this dissertation tests the effects of fluency experiences on consumers' responses towards innovations and focuses on the outcome of perceived innovativeness. It tests how the perception of innovativeness evolves based on fluency experiences and how it influences purchase intention. It is examined to what extent individual differences, particularly gender differences and differences in naïve beliefs, and externally induced naïve theories moderate the interpretation of fluency experiences and hence, if ease-of-processing or difficulty-of-processing are interpreted as 'good' or 'bad'. Furthermore, it is tested whether fluency experiences can stem from analogies that have been suggested to be optimal means to communicate novel products and whether they affect consumers' responses towards the advertised products. The results of the empirical studies contribute to fluency theory, analogical learning and innovation diffusion research and suggest that fluency experiences have a powerful, yet complex, impact on the perception of innovations and particularly of product innovativeness.

ZUSAMMENFASSUNG

Zahlreiche Studien widmen sich der Diffusion von Innovationen, und mehrere Autoren betonen, wie wichtig es ist, effiziente Kommunikationsstrategien für neuartige Produkte zu finden. Allerdings kann das akademische Verständnis für zugrundeliegende individuelle Prozesse der Wahrnehmung von Innovationen noch als unzureichend eingeordnet werden. Ein Grossteil der Forschung im Bereich der Innovationsdiffusion hat sich auf den erklärenden Inhalt von Werbung und die Kommunikation der tatsächlichen Vorteile eines neuartigen Produktes konzentriert. Autoren scheinen vorauszusetzen, dass es Konsumenten leicht fällt zu beurteilen, ob ein ihnen unbekanntes Produkt die tatsächlichen Qualitäten hat, die es gegenüber existierenden Produkten auszeichnet. Jedoch kann die Produktbeurteilung in der Tat von mehreren Faktoren abhängig sein, von denen nicht alle mit den tatsächlichen Produktvorteilen zu tun haben. Bisher wurde nicht untersucht, welche anderen, eher unterbewusst wahrgenommenen, Faktoren die Produktevaluation beeinflussen und wie Konsumenten die Innovativität von neuartigen Produkten zu schätzen lernen.

Die vorliegende Dissertation widmet sich diesem Thema und argumentiert, dass ein potentiell relevanter Forschungsstrang der zu metakognitiven Prozessen bzw. die ‚Fluency‘-Theorie darstellt, um die zugrundeliegenden individuellen Prozesse der Neuproduktbeurteilung zu untersuchen. ‚Fluency‘ (‚Flüssigkeit‘) beschreibt die Leichtigkeit oder die Schwierigkeit, mit denen Stimuli zugänglich sind, aus dem Gedächtnis abgerufen oder verarbeitet werden können (Schwarz et al., 1991). Die Dissertation untersucht in zwei unterschiedlichen experimentellen Settings Effekte durch sogenannte Flüssigkeitserfahrungen auf die Reaktionen der Konsumenten und fokussiert auf die Wahrnehmung der Produktinnovativität. Es wird untersucht, inwieweit individuelle Unterschiede, zwischen Männern und Frauen und zwischen verschiedenen ‚naiven Theorien‘, und die Einführung einer naiven Theorie durch eine externe Quelle die Interpretation von Flüssigkeitserfahrungen moderieren, und damit leichte oder schwere Verarbeitung als ‚gut‘ oder ‚schlecht‘ interpretiert wird. Zudem wird untersucht, ob Flüssigkeitserfahrungen von Analogien, die als optimale Kommunikationsmittel für neuartige Produkte gelten, herrühren und Konsumentenreaktionen ebenso beeinflussen können. Die Ergebnisse der Studien leisten einen Beitrag zur Fluency-Theorie, zur Forschung über Lernen durch Analogien und Innovationsdiffusion. Die Studien zeigen, dass Flüssigkeitserfahrungen einen starken, aber komplex gestalteten, Einfluss auf die Wahrnehmung von Innovationen und im Speziellen auf wahrgenommene Innovativität ausüben.

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1 Introduction

1.1 Problem Orientation

The development and commercialization of innovations remains a top-priority of successful companies (Ziamou & Ratneshwar, 2003; Tellis, Prabhu, & Chandy, 2009). Still, a high rate of novel products fails in the marketplace (Gourville, 2005). Although researchers and practitioners agree upon the high relevance of efficient communication strategies for new products to be successful in the market, “[...] our understanding of consumer decision making in such markets is limited” (Ziamou, 2002, p. 372). The marketing of really new products can be pivotal for their success since they challenge consumers to acquire knowledge, give up existing and learn new behavior (Moreau, Lehmann, & Markman, 2001). Consumers are faced with discontinuity and have to deal with it (Ram & Sheth, 1989) while companies have the ability to help consumers to cope with novel products (Rindova & Petkova, 2007) by choosing adequate marketing communication strategies. In the search for successful communication strategies, research on innovation diffusion, commercialization and marketing has tended to focus on novel products’ actual benefits, such as new functions or features (e.g., Mukherjee & Hoyer, 2001; Rogers, 2003; Ziamou & Ratneshwar, 2003) or improved usability and perceived ease-of-use (Kulviwat, Bruner II, Kumar, Nasco, & Clark, 2007). It seems that literature on innovation diffusion and marketing assumes that consumers are easily able to distinguish whether an unfamiliar product has the actual qualities that make it superior to existing products. Therefore, most studies on innovation communication focus on the effects of declarative or descriptive content in advertisements and product descriptions. However, new product evaluation may in fact hinge on many factors, not all of which have to do with the actual product benefits and qualities we assume are important. Research has not investigated how consumers come to appreciate the innovativeness of novel products although some authors have pointed out the value that the perceived novelty or innovativeness of a product could have in the eyes of the consumer (Rindova & Petkova, 2007).

One stream of potentially relevant psychological literature to examine the underlying processes of new product evaluation is research on metacognitive experiences, particularly fluency experiences. Fluency describes the ease or difficulty with which stimuli can be accessed, retrieved or processed (Schwarz et al., 1991). Research on processing fluency has experienced an explosion in empirical investigation over the

last decades following pioneering work by Schwarz and Reber (e.g., Schwarz et al., 1991; Schwarz, 2004; Reber, Winkielman, & Schwarz, 1998; Reber & Schwarz, 1999; Winkielman, Schwarz, Fazendeiro, & Reber, 2003; Reber, Schwarz, & Winkielman, 2004). It has been suggested that the metacognitive experiences which individuals draw from the fluency are informative in their own right (Schwarz, 2004). A great amount of research confirmed that high fluency, i.e., when information can be easily processed, leads to higher ratings of liking, truth and preferences among others and is hedonically marked, that is, they elicit a positive affect (Reber & Schwarz, 1999; Winkielman & Cacioppo, 2001). Based on multiple fluency and accessibility manipulations, such as easy- or difficult-to-read-fonts, ease and difficulty of recall and thought generation, many studies have documented this usual ‘fluency-liking link’ (see Alter & Oppenheimer, 2009, for a review). This dissertation proposes that fluency experiences may also play a role in the perception and appreciation of innovations and specifically, of the level of product innovativeness. On the one hand, ease-of-processing may have a positive effect on the evaluation of novel products, following the usual fluency-liking link. On the other hand, it may be the other way round for judged levels of innovativeness under specific circumstances, so that difficulty-of-processing is positively interpreted. Pioneering research increasingly confirms that consumers expect and appreciate difficulty in processing in some consumption contexts (Galak & Nelson, 2010) and that stimuli which are difficult to process are associated with novelty (Song & Schwarz, 2009) or exclusivity (Pocheptsova, Labroo, & Dhar, 2010). In a conference paper, Cho and Schwarz (2006) provided first evidence that metacognitive difficulty could account for the perception of innovativeness and that this outcome was positively marked.

Apart from the conference paper of Cho and Schwarz (2006), research on innovation commercialization has not investigated the effect of metacognitive experiences on perceived innovativeness. It seems to be worthwhile to explore how consumers come to judgments about innovations based on fluency theory. Hence, the first area of interest is how consumers interpret fluency experiences in an innovation context and how ease- or difficulty-of-processing affect consumers’ responses. The interpretation of metacognitive experiences can be affected by individual as well as situation-specific factors. Specifically, naïve beliefs or theories people hold about innovations may influence the interpretation of metacognitive ease or difficulty. Naïve theories or lay beliefs can be diverse. For example, as ease-of-processing can be attributed to familiarity because people hold the naïve belief ‘If I understand it, it must be familiar’, difficulty-of-processing may be interpreted as ‘If I don’t understand it, it must be new’

(Cho & Schwarz, 2006). Naïve beliefs can stem from the consumer him- or herself, for example, from experiences or general assumptions dominant in society (Pocheptsova et al., 2010). In investigating individual chronic beliefs, it seems worthwhile to look at obvious differences. Common sense suggests that men and women may hold different naïve beliefs about innovations. Whereas men may favor metacognitive difficulty, women may interpret metacognitive difficulty rather negatively. In order to find further differences in naïve beliefs apart from the biological gender, there is a need to examine further possible beliefs in an innovation context. People who hold naïve beliefs, such as ‘Innovations are mostly complex at the beginning’ or ‘Consumer electronics are mostly innovative’, may respond rather positively to metacognitive difficulty. In contrast, people who do not hold these kinds of beliefs may follow the usual fluency-liking link.

As shown in several studies (Unkelbach, 2006; Brinol, Petty, & Tormala, 2006; Pocheptsova et al., 2010), the interpretation of fluency experiences is not only sensitive to individual chronic beliefs, but also to explanations offered externally, for example, the judgment task order (Cho & Schwarz, 2006) or a prime (Pocheptsova et al., 2010). In general, as soon as consumers are provided with a meaningful explanation for their metacognitive difficulty (Brinol et al., 2006), they may interpret it as good. In investigating naïve theories, that are motivated or induced by an external source, a very practical approach appears to potentially provide useful implications: Practitioners favor the term ‘innovative’ in advertisements and product descriptions. They seem to assume that this term is always advantageous in communicating novel products. Communicating explicitly that a product is innovative may count as a meaningful explanation for metacognitive difficulty. In turn, it also has to be investigated whether the integration of an ‘innovativeness claim’ in easy-to-process stimuli has a negative effect to further explore the “malleable meaning” (Brinol et al., 2006) of those experiences.

When researching consumers’ responses towards innovations in advertisements, a second area of investigation is of interest, namely learning by analogies. Analogies have been suggested to be efficient tools in communicating novel products (Gregan-Paxton & Moreau, 2003; Feiereisen, Wong, & Broderick, 2008). Analogies can be found in everyday life, and marketers use them regularly in advertisements. They help consumers to understand complex information because they provide them with a ‘cue’ to existing knowledge that supports the comprehension of new content. Since marketers have to create and compose analogies, finding criteria for the successful composition of analogies is a critical point. Yet results on analogical learning,

specifically on the composition of analogies, are somewhat mixed and incomplete (Ait El Houssi, 2010). A potential source of these mixed findings may be found in fluency experiences that people draw from different analogies. Fluency research has looked at many different manipulations of fluency experiences (Alter & Oppenheimer, 2009) but not on experiences that may stem from analogies. This dissertation suggests that also analogies may be more or less fluent and therefore promote metacognitive experiences that may account for consumers' responses towards innovations, subjects following either the usual fluency-liking link or the reversed path.

1.2 Research Goals and Structure of the Dissertation

The overall objective of this dissertation is to investigate consumers' responses to innovations, in particular the process of perceiving innovativeness, the overall evaluation of innovative products and purchase intention based on fluency experiences. Research on innovation diffusion has largely neglected findings from cognitive psychology on metacognitive experiences and therefore has not investigated the underlying processes of perceiving innovations and particularly, the outcome perceived product innovativeness. The first and central research goal, which encompasses all others, can be defined as follows:

RG1: The investigation of the relevance of fluency experiences and, in particular, the so-called reversed fluency effect, for the perception of innovations and perceived product innovativeness.

Individuals hold different naïve theories, which account for the interpretation of fluency experiences (Schwarz, 2004). Whereas most research has found that ease-of-processing is positively marked, authors have increasingly addressed situations in which difficulty-of-processing is attributed to positive outcomes. Sources of these attributions have been identified as either being chronic, i.e., stemming from the consumer him- or herself, or situation- or context-specific, i.e., being induced or made salient by external interferences. This research project assumes that gender differences can account for different naïve theories. Although authors have extensively investigated gender differences in attitudes towards technology and science, research on consumers' responses to innovations has largely neglected the possibility of different attitudes of men and women towards innovative products. Hence, examining gender differences in the interpretation of fluency experiences appears to be a promising approach. It seems also important to investigate which naïve theories about

innovations independent from the biological gender exist. The second research goal can be identified as follows:

RG2: The investigation of gender differences and naïve beliefs and their effects on responses to innovations, in particular perceived innovativeness.

Although fluency research has experienced diverse manipulations (Alter & Oppenheimer, 2009), many sources of fluency experiences remain undiscovered, for example analogies. Analogies have been suggested to be optimal means in order to communicate novel products (e.g., Feiereisen et al., 2008). In finding the appropriate criteria for the composition of analogies, authors have focused on the ability of analogies to convey the novel benefits of innovations, thereby largely investigating the comprehension of declarative or descriptive content. Fluency experiences as a potential explanation of the effects of analogies have not been addressed. Not only may consumers have trouble in fully understanding new product attributes in their initial encounter, they may also base their judgments not solely on the declarative content. It therefore seems worthwhile to investigate the fluency of analogies and its effects on perceived innovativeness. Hence, the third research goal can be defined as follows:

RG3: The examination of fluency of analogies and its effects on responses to innovations, in particular perceived innovativeness.

This dissertation assumes that perceived product innovativeness, as defined by Boyd and Mason (1999), is positively interpreted and connotated. As soon as consumers attribute metacognitive ease or difficulty to perceived innovativeness, purchase intention should increase. Therefore, I define the last research goal:

RG4: The investigation of the role of perceived innovativeness as a potential mediator between metacognitive experiences, specifically metacognitive difficulty, and purchase intention.

In sum, these four research goals serve as a guideline throughout this work in order to provide theoretical contributions to the research on fluency theory and analogical learning, with a specific focus on the influence of metacognitive experiences on perceived innovativeness. This dissertation is further expected to contribute to research on innovation commercialization and marketing since it explores the individual underlying processes of perceiving innovations. Finally, implications for how marketing managers shall communicate innovations to consumers will be derived from

the studies conducted. To reach these goals, I have chosen two different study settings that are particularly relevant in an innovation context (cf. research goals 3 and 4).

This dissertation is structured as follows: chapter 1 introduces the topic and presents the research goals that are examined in the course of this dissertation. Chapter 2 provides a theoretical introduction into fluency theory and the construct of perceived innovativeness. As reflected in the research goals, fluency theory serves as a theoretical basis to investigate the underlying processes of perceiving innovations. The encompassing construct to be studied as a dependent variable throughout this dissertation is perceived product innovativeness. Since additional theories are employed in each empirical part, further literature that is specifically relevant in each study context is reviewed in chapters 3 and 4. Each of these two chapters therefore embraces a theoretical background and development of hypotheses, a methodology, a result and a discussion section. Specifically, chapter 3 reviews literature on gender differences and chapter 4 research on analogical learning. To test the proposed hypotheses, a range of experiments was conducted: the first empirical part encompasses three experiments in total and the second part one experiment, employing different fluency manipulations. Chapter 5 summarizes the findings from both empirical parts, thereby integrating them and deriving general conclusions. The last chapter provides general theoretical contributions and managerial implications and elaborates on topics for future research. Figure 1-1 gives an overview of the structure of the dissertation.

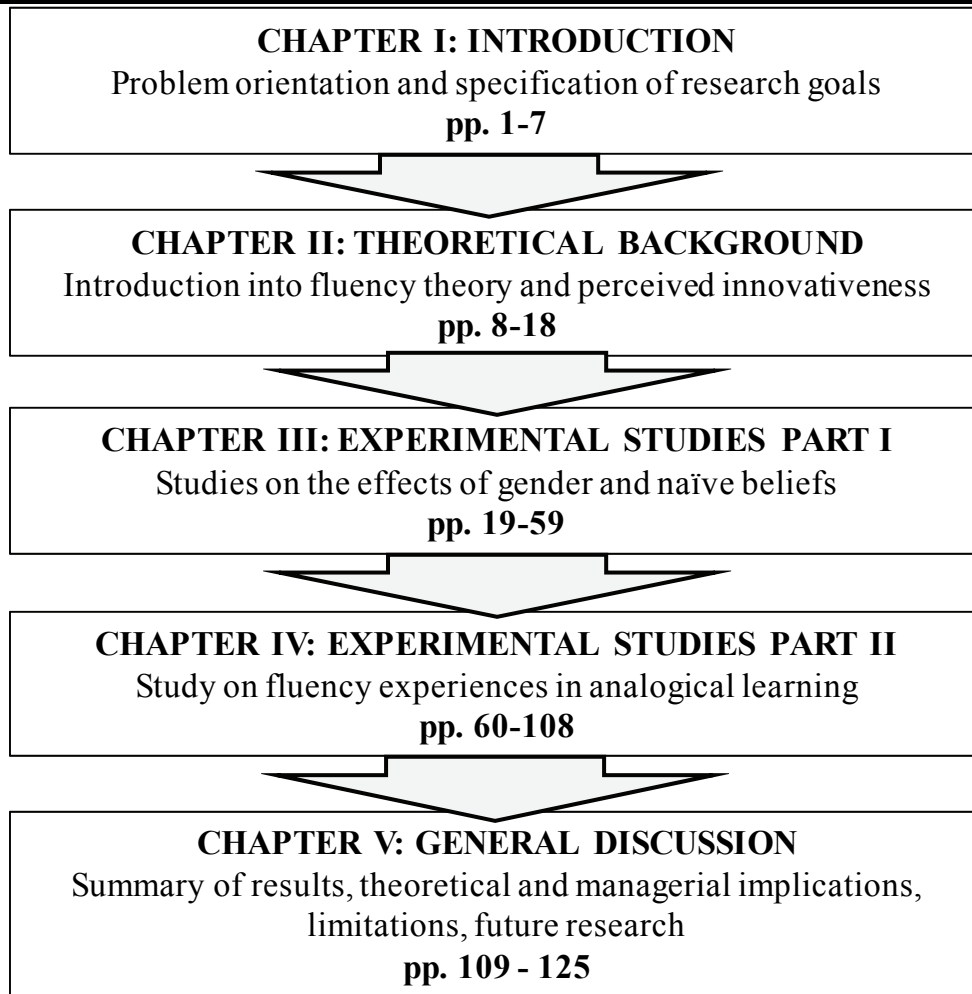


Figure 1-1: Structure of the dissertation

2 Theoretical Background

2.1 Processing Fluency

Fluency, the ease or difficulty with which a stimulus is accessed, retrieved or processed, affects judgments and preferences (Schwarz et al., 1991; Schwarz, 2004). Research found that stimuli which are processed fluently are rated familiar or typical and elicit a positive affect towards the stimuli, in contrast to disfluently processed stimuli that are judged unfamiliar or untypical (Schwarz et al., 1991; Reber et al., 1998; Winkielman & Cacioppo, 2001; Winkielman et al., 2003; Schwarz, 2004). Research has investigated so-called accessibility experiences which describe the ease of recalling information or generating thoughts (Schwarz, 2004) and processing fluency experiences. Processing fluency can be divided into two major conceptualizations: perceptual fluency, i.e., the ease with which a person perceives a stimulus' characteristics (Jacoby & Dallas, 1981); and conceptual fluency, i.e., the ease with which a subject produces associations (Tversky & Kahneman, 1973). Variables that influence metacognitive experiences can take many facets: from readability of fonts (e.g., Cho & Schwarz, 2006; Alter & Oppenheimer, 2008) over the duration of stimuli presentation (e.g., Winkielman & Cacioppo, 2001) to the generation of choice arguments (e.g., Wänke, Bohner, & Jurkowitsch, 1997; for a review, see Alter & Oppenheimer, 2009). In sum, “[f]luency experiences arise as a byproduct of a wide array of cognitive processes, including but not limited to perception, memory, embodied cognition, linguistic processing, and higher order cognition” (Alter & Oppenheimer, 2009, p. 222).

Findings from research on fluency theory have been increasingly integrated into marketing research and tested in marketing contexts (e.g., Labroo & Lee, 2006; Novemsky, Dhar, Schwarz, & Simonson, 2007; Labroo, Dhar, & Schwarz, 2008). For example, Novemsky and colleagues (2007) showed that purchase intentions were affected by the difficulty with which information could be read (study 1) or thoughts could be generated (studies 2, 3, and 4). When subjects did not know the source of the difficulty experience, they showed decreased purchase intentions when they read an advertisement written in a difficult font in contrast to individuals who read the advertisement in a simple font. Furthermore, when participants had to think of ten reasons why to choose a specific option (low fluency) they experienced difficulty and were more likely to defer the decision than subjects who were asked to think of two choice reasons (high fluency). The authors also showed that when a participant's

attention was drawn to the source of the difficulty experiences, their metacognitive experiences did not influence their judgments. In order to understand potential sources accounting for the interpretation of metacognitive experiences, extant research on naïve beliefs and theories needs to be reviewed.

2.1.1 Naïve Theories

A wide array of research has demonstrated the usual fluency liking-link. Results from various approaches showed that “the ease or difficulty with which information can be recalled, or relevant thoughts can be generated, is informative in its own right” (Schwarz, 2004, p. 337). Based on naïve theories, also referred to as naïve beliefs or lay beliefs, findings have shown that metacognitive ease is oftentimes interpreted as ‘good’. For example, the well-known ease-of-retrieval and ease-of-processing effects could be confirmed in various studies: if exemplars can be retrieved or if stimuli are processed fluently, they are associated with familiarity, typicality, truth, liking, intelligence, value or fame (Alter & Oppenheimer, 2009).

Naïve beliefs can stem from the stimulus, one’s own state of knowledge or are dependent on situational influences (for an extensive review, see Schwarz, 2004). People can hold naïve theories about their own memory, the working of their own minds or even about their own confidence. For example, people may follow the naïve belief of ‘If it is easy to recall, many exemplars exist’ or the other way round. As such, ease of recall is mostly interpreted as typicality. Furthermore, ease of recall can affect the subjective feeling of time. Xu and Schwarz (2005) found that subjects judged the Oklahoma city bombing as more distant in time when they had to recall ten details which was perceived as difficult, in contrast to two details. People may also think that if events are difficult to recall, then their memories are poorly working, believing that examples are poorly represented in memory (Schwarz, 2004). Winkielman and colleagues (1998) demonstrated that when subjects had to recall twelve childhood events, they judged their memory to be poorer than people who had to recall four. Also one’s confidence can be affected by metacognitive experiences (Tormala, Petty, & Brinol, 2002; Haddock, Rothman, Reber, & Schwarz, 1999; Haddock, Rothman, & Schwarz, 1996; Nelson & Narens, 1990). If people think ‘If it is easy to recall, then I know a lot about the domain’, they feel more confident the more examples they can recall.

Similar results were found when it comes to processing fluency. For example, if people believe that ‘if a stimulus is easy to process, then it is clear’, they may

disregard that the perceived clarity of the stimulus may stem from earlier exposure (Schwarz, 2004). Reber and Schwarz (1999) showed that the color in which a statement was presented affected judgments of truth. Individuals were more likely to rate statements as true when they were presented in a highly visible color, such as dark blue or red, in contrast to moderately visible colors (yellow, green, light blue). It was also proposed that fluency experiences affected aesthetic responses to objects. For example, individuals were shown to process an object more fluently if it was symmetrical and then to prefer the object (Reber et al., 2004). Winkielman et al. (2001) also provided psychophysiological evidence that processing ease is hedonically marked. A related stream of research on the mere exposure effect (Zajonc, 1968; Bornstein & D'Agostino, 1992; Zajonc, 2000; A. Y. Lee, 2001) underpins these findings. After repeated exposure, unfamiliar objects were found to be processed more easily than after the initial exposure, perceived as more familiar and preferred. For example, experiments showed that people rated names to be famous because they had seen them previously on a list without recognizing that the source of their judgment lied in the previous exposure rather than in the actual truth (Jacoby, Kelley, Brown, & Jaseschko, 1989; Jacoby & Woloshyn, 1989). Accordingly, a vast amount of research has shown that ease-of-processing increases liking.

The judgment task itself can determine whether people use a naïve theory as an inference rule (Schwarz, 2004). Hence, naïve beliefs are malleable (Brinol et al., 2006) and they can be induced or motivated by external sources. A study of Winkielman and Schwarz (2001) found that if participants were told that negative events in one's childhood were difficult to remember they judged their childhood less happy than participants that were told that positive events were difficult to remember when they had to recall twelve events. In a recent study, Unkelbach (2006) demonstrated that people could learn opposite interpretations of cognitive ease in a training phase. These and other findings challenge the view that ease-of-processing is inherently positive. Recent research has addressed the notion that difficulty of processing may be advantageous over ease in some consumption contexts and that the usual fluency-liking link may be reversed under some circumstances.

2.1.2 Metacognitive Difficulty: Reversed Fluency Effect

Whereas fluently processed stimuli have been shown to be marked as positive, disfluently processed stimuli were found to be attributed to rather negatively marked outcomes, e.g., distance in time (Xu & Schwarz, 2005), poor memory (Winkielman et al., 1998) or low interest in the target domain (Schwarz & Schumann, 1997). However,

authors could also demonstrate that disfluency may produce desirable outcomes. Galak and Nelson (2010) demonstrated that the interpretation of metacognitive experiences was situation-specific. Participants were positively affected by metacognitive difficulty when they read a historical story, but negatively when they read a short story. Furthermore, authors have suggested that whereas easy-to-process stimuli may be associated with familiarity or typicality, the reverse must be true for difficult-to-process stimuli; they may be attributed to novelty, exclusivity or uniqueness. Pocheptsova et al. (2010) recently provided first evidence, in a marketing context, that difficulty-of-processing might be preferred when it is associated with the exclusivity of products. They found that purchase likelihood increased for a special-occasion product when the font was difficult to read whereas individuals who were presented with an everyday product were more likely to buy the product advertised with an easy-to-read font (study 1). Similar results could be obtained in a second study when fluency was manipulated by thought generation. The authors demonstrated that naïve beliefs people held about exclusive products affected judgments. Individuals who believed that chocolate truffles were special-occasion products showed higher values for purchase intentions when the product was advertised with a difficult-to-read font (study 3). Concerning judgments of novelty, a plausible naïve belief has been suggested to be ‘If I don’t understand, it must be new’. For example, Cho and Schwarz (2006) demonstrated that individuals who were low in need for cognition attributed the disfluency with which they processed product information that was presented in a difficult-to-read font to the product’s innovativeness. In a similar vein, Song and Schwarz (2009) investigated the perception of risk based on fluency perceptions. Whereas individuals rated ostensible food additives as safer when the names were easy to pronounce, difficult-to-pronounce names led the subjects perceive these additives as more harmful, but also as more novel, which was a rather desirable outcome (study 1 and 2). Likewise, the authors showed that subjects rated amusement-park rides as more adventurous and less dull when assigned to the difficult-to-pronounce condition (study 3).

Table 2-1 and Table 2-2 provide an overview of recent studies on the positive effect of metacognitive difficulty and as such on the reversed fluency effect.

Research Article	Judgment Domain	Fluency Manipulation	Basic Findings
Brinol, Petty, & Tormala (2006)	<i>Liking</i>	Thought-listing difficulty	Increase of favorable and thought-consistent attitudes in the difficult-thought-listing (vs. easy-thought-listing) condition when participants were told that difficulty (vs. ease) is good.
Cho & Schwarz (2006)	<i>Liking (perceived innovativeness, product preference)</i>	Visual difficulty	Higher values for product preference and for perceived innovativeness in the difficult-to-read (vs. easy-to-read) font condition when participants were first asked to evaluate perceived innovativeness (only participants low in need for cognition).
Galak & Nelson (2010)	<i>Liking</i>	Visual difficulty (experiment 2); facial feedback (experiment 3)	Preference for a short story when written in a fluent font, but preference for a historical analysis when written in a disfluent font (experiment 2); people who were told to gather information ('historical analysis') perceived the story to be of higher quality when they furrowed their brow in contrasts to people who were told to enjoy it (experiment 3).
Labroo & Kim (2009)	<i>Liking</i>	Visual difficulty	Higher values for product preference and willingness-to-pay in the difficult-to-process (vs. easy-to-process) condition when participants were primed with a feel-good (vs. conflicting self-control) goal (experiment 1); donation of more in the difficult-to-process (vs. easy-to-process) condition when primed with the goal to become a kinder person (vs. goal-unrelated priming) (experiment 2); more favorable attitudes by participants with chronic high (vs. low) feel-good goals in the difficult-to-process (vs. easy-to-process) condition (experiment 3).

Table 2-1: Findings on the reversed fluency effect

Research Article	Judgment Domain	Fluency Manipulation	Basic Findings
Nielsen & Edson Escalas (2010)	Liking	Preference difficulty	Increased brand evaluations when participants use narrative (vs. analytical) processing and experienced difficulty (ease) in processing an ad.
Pocheptsova, Labroo, & Dhar (2010)	Liking (product preference, purchase intentions, willingness-to-pay)	Visual difficulty (experiments 1, 3, and 4); thought generation (experiment 2)	Higher purchase intention of participants in the difficult-to-read (vs. easy-to-read) condition when product was exclusive (vs. everyday) (experiment 1); higher willingness-to-pay of participants in the difficult-to-retrieve (vs. easy-to-retrieve) condition when service was special (commonplace) (experiment 2); higher purchase intent of participants in the difficult-to-process (vs. easy-to-process) condition when they believed chocolate truffles are an exclusive (vs. everyday) product (experiment 3); higher purchase intent and product liking in the difficult-to-read (easy-to-read) condition when participants were primed with a "special" (vs. everyday) concept (experiment 4).

Table 2-2: Findings on the reversed fluency effect (continued)

Naïve theories have been shown to affect various judgments in one's life, such as lay theories of self-control (Mukhopadhyay & Johar Venkataramani, 2005), affect regulation (Labroo & Mukhopadhyay, 2009) and health issues (Wang, Keh, & Bolton, 2010). Although research on naïve or lay beliefs on innovations does not exist, the investigated naïve belief of 'If I can understand it, it must be familiar' and its reversed counterpart 'If I don't understand it, it must be new' (Cho & Schwarz, 2006) feed into the notion that metacognitive difficulty may play a major role in perceiving innovations. However, just presuming metacognitive difficulty to generally affect consumers' responses towards an innovation in a positive way might be too shortsighted, since novelty is also associated with risk and uncertainty. Schwarz (2004) and other researchers have emphasized that the judgment task plays a major role in determining the interpretation of fluency experiences; that is, if people judge a naïve belief to be valid as a inference rule. Therefore, various chronic naïve beliefs and externally motivated naïve theories that may account for the interpretation of metacognitive experiences in an innovation context will be investigated in the course of this dissertation.

In order to understand the construct of perceived innovativeness that plays a major role in this dissertation, findings from innovation diffusion research and consumer research are summarized in the following chapter.

2.2 Perceived Innovativeness

2.2.1 Definition

The term ‘innovativeness’ is used in research to describe an attribute of organizations, individuals as well as products and processes. Roughly speaking, innovativeness is attributed to somebody or something that is novel or tends to show innovative behavior. This dissertation refers to innovativeness as product innovativeness and excludes any discussions on organizational or personal/consumer innovativeness. The concept of product innovativeness has been defined from different angles, interpreted and measured in multiple ways. This is also reflected in labeling innovations differently. They are interchangeably described as ‘innovative products’, ‘novel products’, ‘really new products’ or ‘radical products’ (Ziamou, 1999). Several authors have addressed this diversity by classifying existing literature in an attempt to provide a definition (e.g., Garcia & Calantone, 2002; Szymanski, Kroff, & Troy, 2007; Harmancioglu, Droge, & Calantone, 2009). In doing so, authors either pursued the specification of the construct or typology or focused on a specific theoretical approach (for a review, see Harmancioglu et al., 2009). The following paragraph summarizes two well-known examples of defining the characteristic(s) of innovative products, namely a typological approach and Rogers’ (2003) innovation attributes.

First, typologies have often been used in innovation diffusion literature to define and evaluate the innovativeness of a product whereas the focus has been on two different dimensions: newness to the market vs. to the company (or newness of technology) (Harmancioglu et al., 2009). One example is the typology suggested by the consultancy company Booz-Allen Hamilton (Booz/Allen/Hamilton, 1982). Based on two dimensions (‘newness to company’ and ‘newness to market’), six different types of novel products have been defined (‘cost reductions’, ‘repositionings’, ‘improvements/revisions to existing products’, ‘additions to existing product lines’, ‘new product lines’, ‘new-to-the-world products’). Other authors offer similar typologies (e.g., Chandy & Tellis, 1998; Veryzer Jr., 1998; Chandy & Tellis, 2000; Lynn & Akgun, 2001; Garcia & Calantone, 2002). Second, a considerable amount of

existing research on innovation diffusion and adoption is based on Rogers' (2003, pp. 257) five innovation attributes:

- relative advantage: the benefit of the innovation, that makes it superior to existing products;
- trialability: the extent to which the innovation can be experimented with;
- observability: the visibility of an innovation in everyday life;
- compatibility: the degree to which an innovation is compatible with values and habits; and
- product complexity: the complexity of learning and using an innovation.

These attributes were extended by the introduction of risk (Ostlund, 1974). Whereas the first four attributes have been considered to have positive effects on product performance, risk and product complexity have been largely suggested to negatively influence product performance (Harmancioglu et al., 2009; Montoya-Weiss & Calantone, 1994).

The two approaches described above dominate conventional innovation diffusion research and reflect a central issue: should product innovativeness be defined from a company's or a consumer's perspective? Whereas Rogers primarily focused on the consumers' point of view, some authors argued that "[a] product's innovativeness classification is never dependent upon the viewpoint of the customer" but that "[T]he goal of identifying innovation typologies is to build an understanding of how the firm must approach the development process of new products" (Garcia & Calantone, 2002, p. 124). Accordingly, research on perceived product innovativeness from a consumer's perspective remains scarce. General adoption models, such as the AIDA-model, dominated literature to understand consumer behavior towards innovations until two decades ago. Since the mid 1990s, findings from information processing research have been increasingly integrated to better understand individual processes of innovation adoption behavior (Olshavsky & Spreng, 1996). Some recent studies define product innovativeness as meaningfulness to the customer, thereby identifying perceived product innovativeness as a success factor (e.g., Sethi, Smith, & Park, 2001; Szymanski et al., 2007). Other research seeks to understand the individual processes that are specific to innovations to derive implications specifically for marketing communications (Moreau, Lehmann, & Markman, 2001; Mukherjee & Hoyer, 2001; Feiereisen et al., 2008). In sum, extant approaches have focused on actual benefits, functions, and features that consumers process and learn. How consumers come to

perceive a product in a very initial phase (Rindova & Petkova, 2007) and evaluate and appreciate its innovativeness has not been investigated.

2.2.2 Measurement

The diversity of approaches and perspectives results in different measurements and interpretations of product innovativeness. Authors have suggested a positive as well as negative relationship between product innovativeness and product performance (Szymanski et al., 2007). In measuring product innovativeness from a company's perspective, the quantity as well as the quality of the dimensions differ and therefore lead to different results. Danneels and Kleinschmidt (2001), for example, stated that the different dimensions with which product innovativeness was operationalized affected the findings for product performance differently. They argued that it was less important whether the product was new to the market or technologically novel. They stated that it might be more relevant whether the novel product fitted into the company's existing marketing and technology competencies. In a different vein, Lee and Colarelli O'Connor (2003) stated that it was not sufficient to measure innovativeness based on the Booz-Allen-Hamilton-typology to investigate its effect on launch strategies. They suggested defining the dimensions more clearly in order to find measurements that were more appropriate. Without a further discussion of product innovativeness from a strategic perspective, it appears that authors differ in various aspects. This is also reflected in the measurement of product innovativeness from a consumer's perspective. Scales are diverse. In the tradition of classical innovation diffusion research (Rogers, 2003), the relative advantage, i.e., the product attribute which makes a novel product superior to existing products, was suggested to be the strongest driver. It was partly equated with product innovativeness (Calantone, Chan, & Cui, 2006; Harmancioglu et al., 2009). Other authors measured product innovativeness by directly asking study participants if they thought the product was innovative (e.g., Cho & Schwarz, 2006). Some researchers (Sethi et al., 2001; Szymanski et al., 2007) focused on the meaningfulness of an innovation to a consumer. According to them, a novel product might be determined as innovative if the consumer perceived it as novel but also as useful and meaningful. Thereby, it was not a single product attribute that made a novel product meaningful but rather the product as a whole. Furthermore, the numbers of items differ in various measurements; item numbers range from one to ten. Calantone et al. (2006), for instance, measured product innovativeness on one single item (*Rate how innovative the product was – its degree of innovativeness – relative to products then in your market area.*, p. 416) and

other authors used 10 items (e.g., Sethi et al., 2001). Table 2-3 provides a selective overview of measurements of product innovativeness from a consumer's perspective.

Research Article	Items and Scales
Olshavsky & Spreng (1996)	(1) Do you perceive this product to be an innovation? (yes/no) If yes: (2) How innovative is it? (1 = minor variation of existing product; 7 = completely new product) (3) How much impact would use of this product have on your daily life? (1 = little or no impact; 7 = very great impact) (4) How desirable is this product for you or someone you know? (1 = not at all desirable; 7 = extremely desirable)
Boyd & Mason (1999)	(1) (The product) is a great idea. (2) (The product) would be fun to own. (3) This is the best way to improve the quality of (product category). (4) Many people will buy (the product). (5) (The product) is here to stay. (6) (The product) fills a real need for me. (7) (The product) is a big improvement over existing (product category). (8) (The product) can give me a real value. (9) (The product) is just another gimmick. (r) (10) Many people will believe (the product) is worth the cost. (all items measured by 1= do not agree at all; 7 = completely agree)
Moreau, Lehmann, & Markman (2001)	(1) How different is the innovation from other products you currently know about? (2) How innovative do you perceive the product to be? (3) To what extent would the innovation change the way you would use the product or service? (all items measured on scales ranging 1 to 7, with higher means indicating higher perceptions of innovativeness)
Sethi, Smith, & Park (2001)	Dimension 1: Novelty (1) Predictable - novel (2) Commonplace - original Dimension 2: Appropriateness (1) Useful - useless (reverse coded) (2) Appropriate - inappropriate (reverse coded) Measured on a 7-point differential scale. Only sample items available. 10 items in total were used.
Cho & Schwarz (2006)	How innovative is the product? (1= not innovative at all; 7 = very innovative)

Table 2-3: Measurements of perceived product innovativeness

Measuring perceived innovativeness on one item by explicitly asking if the product is perceived as innovative appears to be an insufficient approach since it does not capture the underlying dimensions of innovativeness. Therefore, a measurement by a single

item can be excluded within this work. The present dissertation does not seek to develop a unified conceptualization or a definition of perceived product innovativeness. It aims, rather, at investigating the underlying processes, which determine the perception of innovations and innovativeness of really new products based on fluency theory. Therefore, in the search for a sufficient measurement of perceived innovativeness as the main dependent variable, an adapted version of the scale of Boyd and Mason (1999) was selected. The authors developed the scale to measure the “attractiveness of innovations” based on Rogers’ (2003) innovation attributes. They sought to capture specific attractiveness attributes of innovations in order to explain antecedents of product adoption. They concluded that, based on their scale, managers were provided with important insights of which factors drove the success of an innovation. An explorative factor analysis confirmed the items as unidimensional with a Factor eigenvalue of 5.50 and a reliability coefficient of $\alpha = .91$ (Boyd & Mason, 1999, p. 312). Because of the theoretical background the scale was developed on, it provides a useful measurement of perceived product innovativeness within this work. However, to adapt to related work of perceived innovativeness in consumer behavior, the scale was changed in that items no. 3 and 5 were deleted from the original scale and the item ‘*This product is innovative.*’ was added. The reliability coefficients of the adapted scale used in the empirical parts are reported in the single studies.

In sum, a review of existing literature on product innovativeness shows first, how diverse approaches and findings are. Second, it demonstrates a significant lack of understanding of why and how consumers perceive innovativeness and whether perceived product innovativeness increases consumers’ purchase intentions. As elaborated in chapter 1, this dissertation examines the role of fluency experiences in two different settings. Whereas the first empirical part investigates the role of gender differences and naïve beliefs in three experimental studies and their effects on consumers’ responses to innovations (chapter 3), the second empirical part addresses analogical learning and tests in one experimental study whether analogies can account for fluency experiences and how these experiences influence consumers’ responses to innovations (chapter 4).

3 Empirical Studies I: Effects of Gender Differences and Naïve Beliefs

Conventional wisdom suggests keeping information in advertisements simple and short (Pocheptsova et al., 2010), particularly when companies are introducing novel products. Recent research has increasingly investigated the effect of informational complexity on new product evaluation. Whereas the few studies that exist investigated the effect of quality and quantity of information (Mukherjee & Hoyer, 2001; Ziamou & Ratneshwar, 2002; Putrevu, Tan, & Lord, 2004), to the knowledge of the author no study exists on fluency experiences drawn from informational complexity, i.e., from the quantity of information. It seems, therefore, worthwhile investigating how the pure quantity of information affects fluency experiences and how these experiences influence new product evaluation in turn. As elaborated in chapter 2.1.2, recent fluency research has increasingly investigated a reversed fluency effect, i.e., settings in which metacognitive difficulty enhanced product evaluation (e.g., Pocheptsova et al., 2010). These findings are particularly relevant when deciding whether innovative products should be communicated as simply as possible or if metacognitive difficulty enhances perceived innovativeness and purchase intention. Further, findings on gender differences in attitudes towards technology and science suggest that men and women are likely to hold different naïve beliefs about innovations. These naïve theories, in turn, influence how metacognitive difficulty is interpreted. This work investigates effects of gender differences and naïve beliefs on the interpretation of metacognitive experiences with a focus on the effects of metacognitive difficulty on perceived innovativeness.

The following section reviews existing literature on informational complexity and gender differences in order to develop hypotheses on how fluency experiences stemming from information complexity affect responses of men and women to novel products. To test the hypotheses, three studies were conducted. Whereas the first study explicitly investigates differences of biological gender, the second and the third study introduce naïve beliefs that may play a role when it comes to the interpretation of metacognitive difficulty and its effects on perceived innovativeness, attitude towards the product, and purchase intention.

3.1 Theoretical Background

3.1.1 Informational Complexity and New Product Evaluation

Research on informational complexity in communicating novel products remains scarce (Ziamou & Ratneshwar, 2002). Recent research is increasingly recognizing the effect of informational complexity in advertisements and product descriptions on new product evaluation. For example, Mukherjee and Hoyer (2001) showed that participants responded more favorably to novel products that were relatively low in complexity when novel attributes were added to the product information, i.e., when the information appeared to be more complex. In contrast, subjects rated a novel product that was relatively high in complexity less favorably when novel attributes were added. The authors demonstrated that people draw higher learning-cost inferences when a relatively complex product was presented with novel attributes. Ziamou (2002) investigated the effect of new vs. known functionalities in new product interfaces. She found that subjects perceived lower uncertainty when a new interface offered new functionality because subjects rated the benefit of the new functionality. In contrast, when a new interface only provided pre-existing functionality, people paid more attention to the new interface comparing it with existing ones. They thereby perceived higher uncertainty resulting in lower purchase intentions. In a similar study, Ziamou and Ratneshwar (2002) argued that the amount of information given in an ad affected product performance uncertainty from a consumer's perspective. They could show that if a new interface was communicated with new functionality, more information increased uncertainty and decreased purchase intention. In contrast, if a new interface was combined with existing functionality, more information decreased uncertainty and increased purchase intention.

Although none of the research discussed above was explicitly based on fluency theory, the studies of Mukherjee and Hoyer (2001) as well as Ziamou and colleague (Ziamou & Ratneshwar, 2002; Ziamou, 2002) can be integrated into research on fluency experiences to some extent. In general, the authors confirmed that information that increases or reduces uncertainty or learning-cost inferences results in increased or reduced product preferences. Whereas the studies of Ziamou (2002) and Mukherjee and Hoyer (2001) focused on the quality of information, Ziamou and Ratneshwar (2002) explicitly manipulated only the quantity of information. The authors linked their research to the so-called availability heuristic (Tversky & Kahneman, 1973; Folkes, 1988), which stated that perceived uncertainty might be low (vs. high) if

positive (vs. negative) outcomes could easily be imagined. Based on this notion, Ziamou and Ratneshwar (2002) argued that the higher amounts of information prompted subjects to pay more attention to the new interface, dedicating more cognitive effort to think of failure scenarios in product performance. Although the authors made a helpful and valid point in explaining new product evaluation was affected by information complexity, they did not fully consider the effects of fluency experiences and their interpretations.

Following the disentangling studies on the availability heuristic and fluency experiences by Schwarz et al. (1991; 2004) and other authors, metacognitive experiences that are drawn from the ease or difficulty of processing are informative in their own right, independent from the declarative or descriptive content. Specifically, it was discussed in chapter 2.1.1 that metacognitive ease or difficulty can both be (mis)attributed. For example, the thought generation study of Pocheptsova et al. (2010) demonstrated that people were more willing to pay for a casual restaurant if they only had to think of one restaurant example. Ergo, they followed the usual fluency-liking link when the object of evaluation was just a common product. In contrast, subjects who had to think of five special-occasion restaurants attributed their metacognitive difficulty to the product and its exclusivity and showed increased willingness-to-pay (study 2).

Following this notion, this research argues that people hold naïve theories about innovations that influence the interpretation of metacognitive difficulty. It was proposed in chapter 2.1.2 that metacognitive difficulty may be attributed to product innovativeness under some circumstances, and therefore increases purchase intention. Since authors have not addressed informational complexity, i.e., the quantity of information, in fluency research, it seems worthwhile investigating its manipulating effects on fluency experiences and, in turn, how these derived metacognitive experiences influence new product evaluations. In examining the relationship of fluency experiences, which are drawn from informational complexity, and new product evaluation, the investigation of gender differences seems to be necessary. Research on emotions (cf. Fisher & Dubé, 2005), information processing (cf. Meyers-Levy & Maheswaran, 1991; Kempf, Laczniak, & Smith, 2006) and in particular advertising research has long acknowledged gender differences in the evaluation of advertisements. Authors have covered multiple topics such as gender differences in responses to media formats (TV, print), spokesperson effects or brand positioning (for an extensive review, see Wolin, 2003). Wolin (2003) concludes: “[...] gendered advertising response differences exist. It is elucidated that marketers would be wise to

design advertisements directed towards females differently than those directed towards males” (p. 125). In order to draw a line between gender differences in information processing and the proposed approach of this work, the following paragraph summarizes research on differences in information processing. Relevant research on gender differences in technology and science is then discussed in an attempt to derive possible naïve theories for men and women and to hypothesize on the effects of fluency experiences on new product evaluation.

3.1.2 Gender Differences

3.1.2.1 Information Processing

Two major approaches dominate the literature on gender differences in information processing. On the one hand, the Selectivity Hypothesis (Meyers-Levy & Maheswaran, 1991; Meyers-Levy & Sternthal, 1991) classifies men as heuristic and women as comprehensive processors. On the other hand, some authors draw a distinction between men as rather item-specific and women as relational processors (Einstein & Hunt, 1980; Putrevu, 2001; Putrevu, 2004; Kempf et al., 2006). According to the selectivity interpretation, women elaborate messages more thoroughly and are more sensitive to the details of important information when it comes to judgments. Men, in contrast, use superficial cues and base their evaluations on these (Meyers-Levy & Maheswaran, 1991; Putrevu, 2001). Research found that women are more likely to consider additional information in ads and therefore respond more favorably to complex ad information than men (Meyers-Levy & Sternthal, 1991; Putrevu et al., 2004). This view implies that female is superior to male processing. According to the approach of men being item-specific and women being relational processors, men who are said to pursue agentic goals prefer to elaborate specific details of messages that are personally important to them. In contrast, women who are concerned with relationship-oriented goals try to put single attributes together into a full picture by elaborating their interrelationships (Putrevu, 2001). Putrevu (2004) found that women preferred messages that conveyed harmony whereas men favored messages that communicated competition. Further confirmation for this interpretation can be found in several studies like, for example, on the differences between genders in spatial processing or verbal accuracy (for a review, see Putrevu, 2001) whereas the results for the Selectivity Hypothesis are somewhat mixed. For example, Kiecker, Palan, and Areni (2000) found that when men were confronted with masculine figures in narratives, they were superior to the female coders in fulfilling the task to code, which

contradicts the Selectivity Hypothesis. The authors could not explain why women performed worse on the coding task than hypothesized.

These findings allow the conclusion that based on societal roles, sex identities and images and brain lateralization, men and women respond differently to informational complexity. This line of research would suggest, however, that responses are dependent upon the design of the content and that women generally would respond more favorably to complex ad content. This dissertation argues that fluency experiences can account for different responses of men and women. Specifically, it is suggested that differences in responses are due to different interpretations of metacognitive experiences.

3.1.2.2 *Technology and Science*

Based on research on gender differences in technology and science, men and women can be expected to hold different naïve beliefs about technology, innovations and science and, consequently, interpret metacognitive experiences differently. Although women have been increasingly entering the workforce, even in male-dominated areas such as engineering, gender stereotypes and identities still exist and dominate marketing communications; for example, typical male and female stereotypes are still used as testimonials (for a review, see Putrevu, 2001 and Wolin, 2003).

First, although some societal gender differences are diminishing, stereotypes and gender identities are still present (Fisher & Dubé, 2005) and, as a consequence, determine ideas and attitudes towards technology. Since children identify with a particular gender, namely with their own, they constantly try to match their behavior, characteristics, and attitudes with what they expect to be typically male or female, influencing social behavior and cognitive abilities (Putrevu, 2001, p. 3). This finding is also supported by gender-related personal characteristics. For example, men seek to maintain high-agency characteristics. This includes not being vulnerable and weak. Men have been found to put great effort into achievement, so they feel the need to provide financial security for the loved ones and their families. Furthermore, they show the desire for mastery and dominance (Eagly, Wood, & Diekmann, 2000; Fisher & Dubé, 2005; Croson & Gneezy, 2009). Women, in contrast, are relation-oriented and include opinions from their environment in judgments more than men (Fisher & Dubé, 2005). People from the outside world accordingly form their expectations towards a specific gender, so gender stereotypes are prescriptive (Burgess & Borgida, 1999; Prentice & Carranza, 2002). It was found, for example, that even in an

environment like Princeton University, qualities of intelligence, competence, rationality, and ambition were more desirable for men than for women (Prentice & Carranza, 2002). Research on gender differences in technology and science accordingly found that women were rather supported by their environment when they wanted to quit a technology major at university whereas men felt the need to stay (J. D. Lee, 2002). Since violations of gender stereotypes can be punished (Prentice & Carranza, 2002), it seems reasonable that men prefer to avoid to violate the stereotypical image of male achievement. Some women, who feel more attracted to technology than the average woman may also be subject to punishments by the environment. Burgess and Borgida (1999) suggested that gender discrimination is mostly based on prescriptive aspects rather than prejudice ones. Consequently, women may feel the need to think of themselves as non-technologically interested – since they try to follow a female image.

Second, technological products are still subject to “masculinisation”, which is most dominant in rather male-oriented and aggression-driven computer games (Gilbert, Lee-Kelley, & Barton, 2003, p. 259). Furthermore, although differences in the use of computing and the internet are slowly diminishing in western society (e.g., Schumacher & Morahan-Martin, 2001), gender differences in technology still exist, with men exhibiting a greater fascination about technology and innovations. Additionally, it was found that men and women have different expectations about technological products. Whereas men expect a novel product to be useful and may disregard issues arising from product complexity, women emphasize the perceived ease of use (Venkatesh & Morris, 2000).

Taken together, gender differences have been addressed in basic research in psychology and information processing (Meyers-Levy & Maheswaran, 1991), but also in more specific areas such as advertising (Wolin, 2003) and technology and science (J. D. Lee, 2002). Research on the perception and learning of really new products as well as on fluency and naïve theories has, though, largely ignored gender differences as a factor but there is a special need to consider these differences. From a theoretical as well as practical perspective, studies that use informational complexity and technological innovations as stimuli should consider gender differences. Most technological innovations, particularly consumer electronics, and the way they are communicated, are rarely gender-neutral. Even if both men and women objectively use these products equally, perception, motivations and evaluations might be different. Following findings from psychological research, technology and science research and common sense, it can be suggested that men and women hold different naïve theories

about technological innovations. Women can be considered less confident about themselves when it comes to the use of technology and, therefore, respond rather negatively when confronted with complex information. In contrast, men might rather attribute high complexity to the innovativeness of the product. Given this notion, hypotheses are developed and tested in the first experimental study.

3.2 Study 1

3.2.1 Development of Hypotheses

The construct of perceived innovativeness was extensively discussed in chapter 2.2. Based on findings in fluency research, it can be proposed that as soon as subjects are provided a reason to attribute metacognitive difficulty to innovativeness, they should perceive a product as more innovative and generally respond more favorably to the ad and the product. As elaborated above, men are proposed to prefer complex information when they encounter an innovation. Following the belief that innovations are mostly complex at the beginning, they should respond more favorably than women should to low fluency of the advertisement. Therefore, it can be hypothesized:

H_{1a-b}: (a) Women will perceive a product as more innovative in an advertisement high in fluency (vs. low in fluency) whereas (b) men will perceive a product as more innovative in an advertisement low in fluency (vs. high in fluency).

If women rather follow the usual fluency-liking link in perceived innovativeness, they should also show higher purchase intentions whereas men should show higher purchase intentions when they experience metacognitive difficulty. Hence,

H_{2a-b}: (a) Women will show higher purchase intention towards a product presented in an advertisement high in fluency (vs. low in fluency) whereas (b) men will show higher purchase intention towards a product presented in an advertisement low in fluency (vs. high in fluency).

Although of secondary interest in this study, attitude towards the product and attitude towards the ad were also measured. It can be hypothesized that these dependent variables follow the same pattern as perceived innovativeness and purchase intention:

H_{3a-b}: (a) Women will respond more favorably to an advertisement high in fluency (vs. low in fluency) whereas (b) men will respond more favorably to an advertisement low in fluency (vs. high in fluency).

H_{4a-b}: (a) Women will respond more favorably to a product presented in an advertisement high in fluency (vs. low in fluency) whereas (b) men will respond more favorably to a product presented in an advertisement low in fluency (vs. high in fluency).

The following framework visualizes the hypotheses presented.

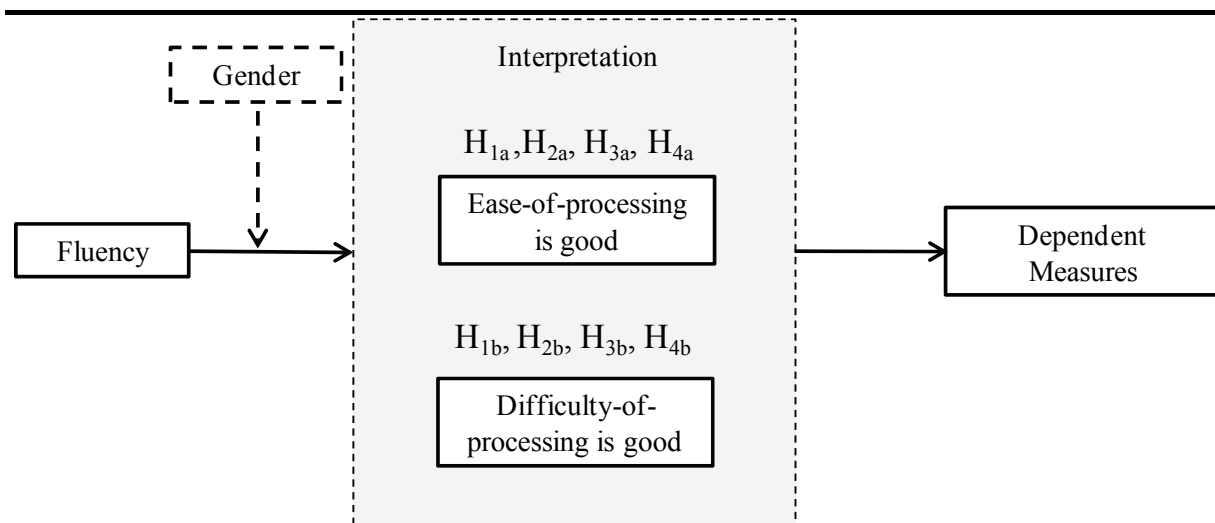


Figure 3-1: Framework of study 1

To test these hypotheses, an experiment was conducted among 168 students. The study is described and results are presented in the following sections.

3.2.2 Design, Subjects, and Procedure

The hypotheses were tested in an experiment with a 2 Fluency (high vs. low) \times 2 Gender (male vs. female) between-subjects design. 168 business students within a 19-to-45-years-old range with a mean age of 22.66 years participated in exchange for the chance to win gift coupons for the movie theater. 39.3 percent of the subjects were female. The procedure and the presentation of the material largely followed Ziamou and Ratneshwar (2002). Participants were handed booklets that contained the advertisements and the questionnaire. On the first page, they were again informed that all data were treated anonymously and they were asked to provide demographic data. It was further stated that on the next page they would find the advertisement. Participants were asked to read the ad in a self-paced manner followed by the

completion of the questionnaire. The completion of the study required about 10 minutes. Subjects were then debriefed and dismissed.

3.2.3 Development of Stimuli

An e-reading device (referred to as E-Reader) was chosen as an innovative product from the category of consumer electronics. At the time of the study, this particular E-Reader had not been introduced to the market yet. Furthermore, participants were asked in the main study how familiar they were with the product on a one-item seven-point differential scale anchored by *don't know it well at all – know it very well*. Participants rated the product as unfamiliar, with the mean ($M = 2.94$) being significantly lower than the midpoint of the scale ($t(164) = 8.05, p < .001$). Consequently, the product could be considered a novel product (Roehm & Sternthal, 2001).

Based on real product descriptions, copy texts with two levels of fluency were created. The level of fluency was manipulated by increasing the number of different information components (Ziamou & Ratneshwar, 2002). A copy text high in fluency contained 71 words and communicated the main feature of the new product within the first three sentences. It then claimed how to use the product and made a statement about the quality of the product. A copy text low in fluency contained 161 words and the same information, as did the copy text high in fluency. Some deeper descriptions of secondary rather irrelevant attributes were added. In a pretest, participants were asked to rate the fluency with which the copy text could be processed on a one-item, seven-point differential scale (*easy to comprehend – difficult to comprehend*). A t-test deemed the manipulation to be successful ($M_{\text{high_fluency}} = 3.05$ vs. $M_{\text{low_fluency}} = 3.6$; $t(110) = 2.29, p < .05$). Furthermore, a 2 Fluency (high vs. low) \times 2 Gender (male vs. female) ANOVA revealed that no other effects were significant (all $ps > .4$) but the direct effect of the fluency manipulation ($F(108) = 5.95, p < .05$). To exclude any effects of visual complexity (for example, see Janiszewski & Meyvis, 2001), the advertisement design was kept simple. The pretest revealed that participants perceived ad design as simple, with the mean ($M = 3.14$) being significantly lower than the midpoint of the scale ($t(111) = 6.00, p < .001$). The advertisement also showed a picture of the product. Real brand names were removed to prevent brand influence, replaced instead by a hypothetical brand name ('DigiRead') that served as a simple brand logo. A hypothetical claim was added ('Connected Reading'). Furthermore, the advertisement claimed the price, and an additional design element said 'new'.

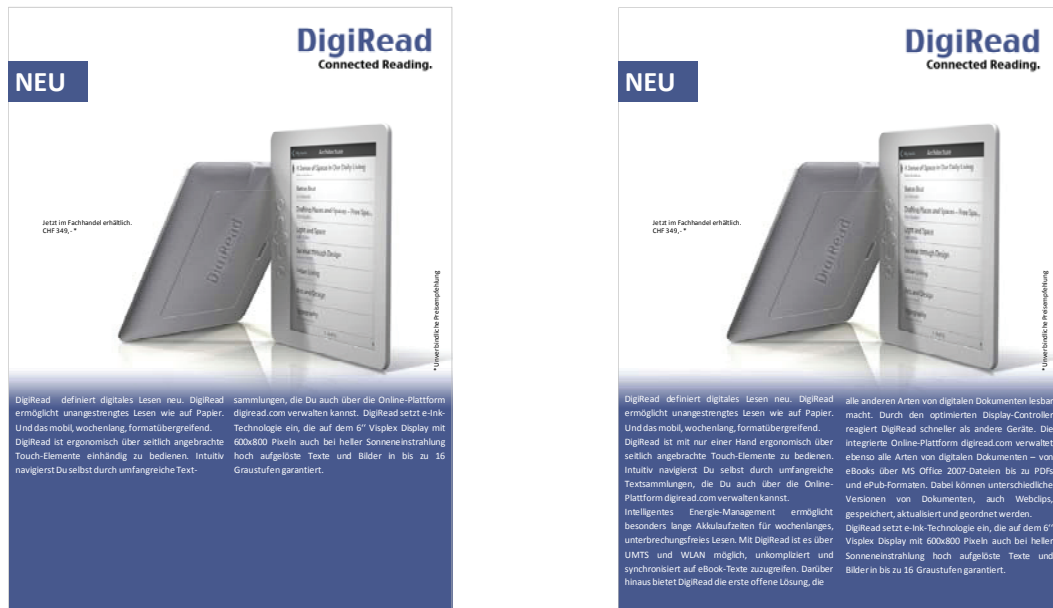


Figure 3-2: Experimental stimuli used in study 1 (ad high in fluency vs. ad low in fluency)¹

3.2.4 Selection of Dependent Measures

Participants were first asked to rate whether they would buy the product on a four-item, seven-point Likert-scale (*I would try DigiRead.*; *I would buy DigiRead if I happened to see it in a store.*; *I would actively seek out DigiRead in a store in order to purchase it.*; *I would buy software or hardware updates of DigiRead.* on strongly disagree (1) to strongly agree (7); $\alpha = .79$; cf. Baker & Churchill Jr., 1977). Purchase intention was followed by perceived product innovativeness which was measured on a nine-item, seven-point Likert-scale (cf. Boyd & Mason, 1999). Subjects were asked to strongly disagree (1) or strongly agree (7) to the following statements: *DigiRead is a great idea.*; *DigiRead would be fun to own.*; *Many people will buy DigiRead.*; *DigiRead fills a real need for me.*; *DigiRead is a big improvement over existing consumer electronic products.*; *DigiRead is just another gimmick.*; *Many people will believe DigiRead is worth the cost.*; *DigiRead is very innovative.* ($\alpha = .87$). Attitude towards the product was measured on a four-item, seven-point differential scale based on Aaker (2000) anchored by *good – bad*; *favorable – unfavorable*; *likeable – dislikeable*; *desirable – undesirable* ($\alpha = .94$). Finally, attitude towards the ad was measured on a eight-item, seven-point differential scale based on D. Cox and Cox (2001) anchored by *not informative – informative*; *not factual – factual*; *not useful –*

¹ A full overview of experimental stimuli used in study 1, 2, and 3 can be found in appendix 7.1.

useful; not believable – believable; not realistic – realistic; bad – good; not appropriate – appropriate and not helpful – not helpful; $\alpha = .88$). Table 3-1 summarizes the measures of study 1.

Measure	Number of Items	Reliability	Source
<i>Dependent Measures</i>			
Perceived Innovativeness	9	$\alpha = 0.87$	cf. Boyd & Mason (1999)
Purchase Intention	4	$\alpha = 0.79$	cf. Baker & Churchill (1977)
Attitude Towards the Product	4	$\alpha = 0.94$	Aaker (2000)
Attitude Towards the Ad	8	$\alpha = 0.88$	Cox & Cox (2001)
<i>Manipulation and Confound Checks</i>			
Fluency	1	n.a.	n.a.
Professionalism of ad	3	$\alpha = .84$	n.a.
Relevancy of information	3	$\alpha = .82$	n.a.

Table 3-1: Overview of scales used in study 1 (dependent measures in order of measurement)

3.2.5 Results

3.2.5.1 Confound Checks

Although ad design was kept simple, the ad was created as realistically as possible but the design should not be seen as overly professional or too unpleasant to exclude ad design as an influencing factor. Participants evaluated the ad on a three-item seven-point differential scale (*not professional – professional; does not suit the product – suits the product; not at all pleasant – very pleasant; $\alpha = .84$*). A t-test revealed that participants rated the professionalism of the ad slightly better than the scale midpoint ($M = 4.28$; $t(165) = 36.47$, $p < .05$) which was acceptable in this context. Furthermore, to rule out any preferences based on being provided more information, participants were asked to rate to what extent the information given in the ad helped to evaluate the

product on a three-item, seven-point differential scale (*irrelevant – relevant; not at helpful – very helpful; not at all sufficient – sufficient*; $\alpha = .82$). A t-test produced no significant differences between fluency conditions ($M_{high_fluency} = 4.51$ vs. $M_{low_fluency} = 4.60$; $p > .66$). Furthermore, a 2 Fluency (high vs. low) \times 2 Gender (male vs. female) ANOVA revealed men and women showed no differences on relevancy of information across conditions (all $ps > .18$).

3.2.5.2 Hypotheses Testing

A series of 2 Fluency (high vs. low) \times 2 Gender (male vs. female) ANOVAs tested the hypothesized effects followed by planned contrasts. To further explore any non-hypothesized effect, Bonferroni post-hoc tests² were conducted which will be reported in case of significant results.

Perceived Innovativeness. An ANOVA revealed that the direct effect of gender was non-significant ($p > .56$) whereas the direct effect of fluency ($F(163) = 2.77, p < .1$) as well as the interaction effect ($F(163) = 3.03, p < .1$) on perceived innovativeness were significant. To follow up the effects, a series of planned contrasts was performed. No significant difference was found for men between high and low fluency ($p > .95$) but it was found for women ($t(64) = 2.13, p < .05$). Whereas men responded similarly to perceived innovativeness when presented with advertisements high or low in fluency, women perceived a product as more innovative when they were shown an ad high in fluency. Hence, H_{1a} could be supported but H_{1b} could not.

² Post-hoc tests detect any differences in effects that have not been hypothesized previously. Bonferroni's test accounts for alpha error inflation, so limits the Type I error (e.g., Klockars & Sax, 1986).

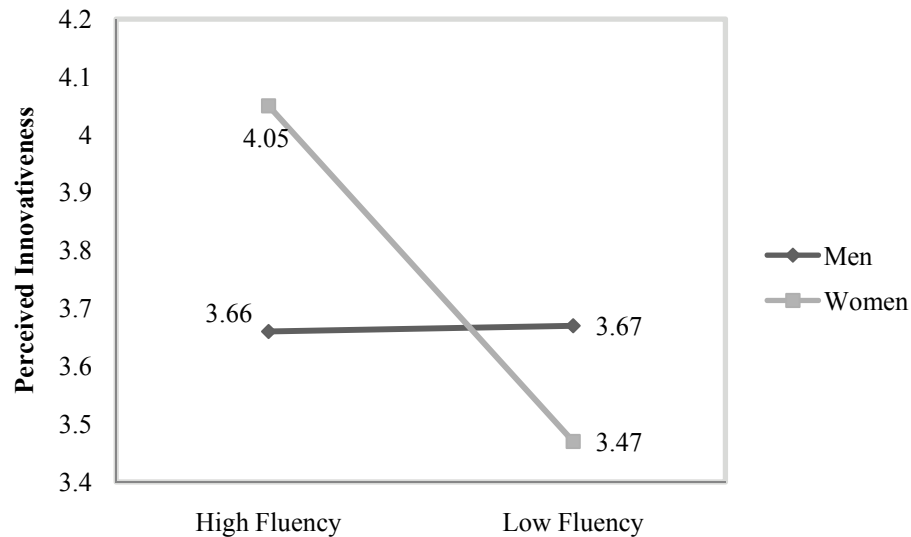


Figure 3-3: Means for perceived innovativeness

Purchase Intention. An ANOVA found no significant effects for fluency on purchase intention (all p s > .14). Planned contrasts or post-hoc tests were not conducted. However, means showed that women followed the usual fluency-liking link as hypothesized, more willing to buy the product when presented with an ad high in fluency. The effect of fluency was attenuated for men as they responded almost identically in both fluency conditions. Hence, H_{2a-b} could not be supported.

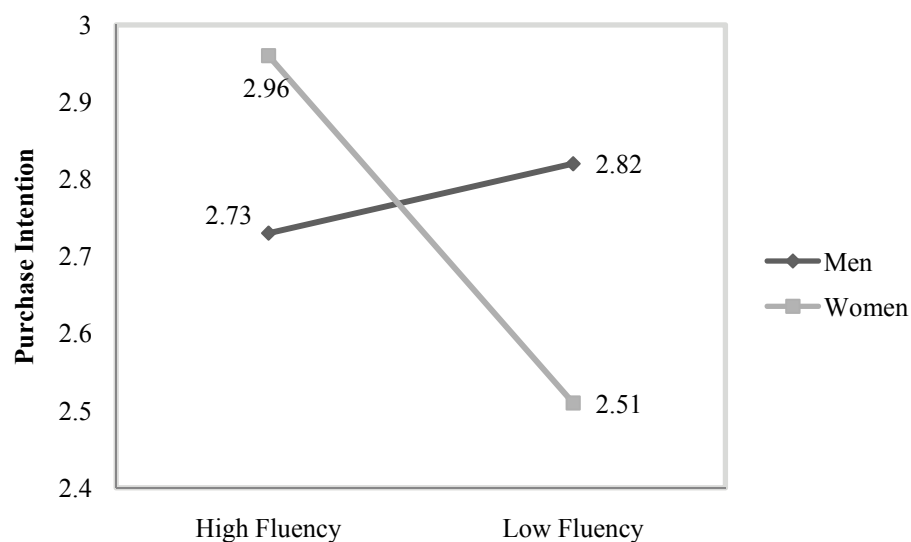


Figure 3-4: Means for purchase intention

Attitude towards the product. An ANOVA on attitude towards the product revealed that the direct effects of gender ($p > .32$) and fluency were not significant ($p > .48$) but the interaction term was ($F(1,163) = 7.87, p < .01$). A series of planned contrasts produced a significant difference between high and low fluency for men ($t(99) = 1.65, p < .1, 1$ -tailed) and for women ($t(64) = 2.29, p < .05$), supporting H_{3a} as well as H_{3b} ; women liked a product better when they were presented with an advertisement high in fluency whereas men preferred the product when they were shown an advertisement low in fluency. Additionally, a Bonferroni post-hoc test showed a significant difference between men and women in the low-fluency condition ($p < .01$).

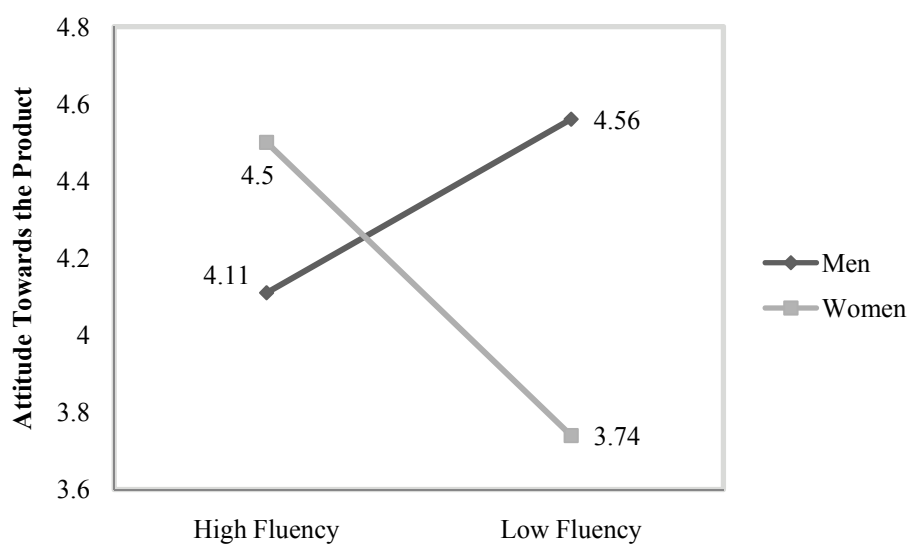


Figure 3-5: Means for attitude towards the product

Attitude towards the ad. An ANOVA on attitude towards the ad produced a non-significant direct effect of gender ($p > .56$) and fluency ($p > .32$). As expected, the interaction term was significant ($F(162) = 4.93, p < .05$). Two planned contrasts revealed that there was a significant difference between high and low fluency for women ($t(63) = 1.98, p < .05, 1$ -tailed) but not for men ($p > .32$), although pointing into the hypothesized direction for men. Hence, H_{4a} (stating that women followed the usual fluency-liking link) could be supported whereas H_{4b} (on the reversed fluency effect for men) had to be rejected. Furthermore, a Bonferroni post-hoc test produced a significant difference between men and women in the low-fluency-condition ($p < .05$).

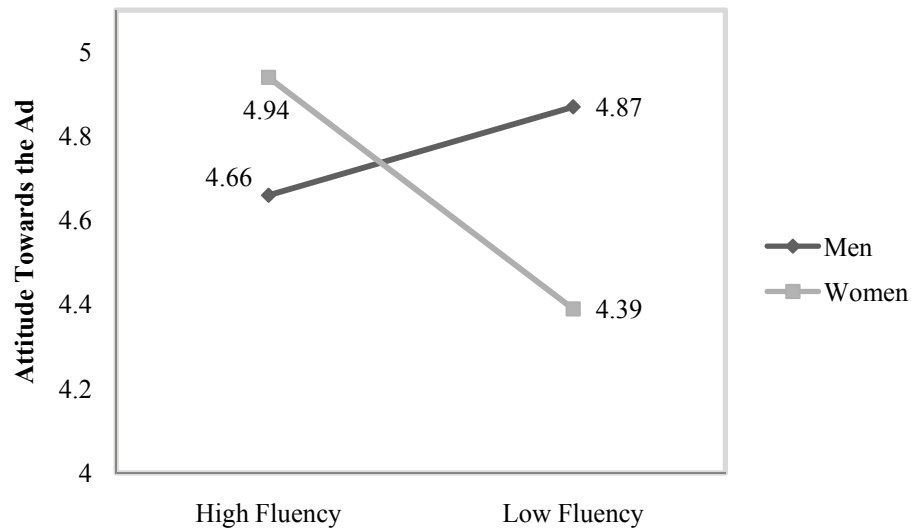


Figure 3-6: Means for attitude towards the ad

Table 3-2 summarizes means and standard deviations for the dependent measures.

	High Fluency		Low Fluency	
	Men	Women	Men	Women
Perceived Innovativeness	3.66 (.99)	4.05 (1.18)	3.67 (1.11)	3.47 (1.02)
Purchase Intention	2.73 (1.21)	2.96 (1.13)	2.82 (1.16)	2.51 (1.16)
Attitude Towards the Product	4.11 (4.11)	4.50 (1.25)	4.56 (1.43)	3.74 (1.44)
Attitude Towards the Ad	4.66 (1.12)	4.94 (1.05)	4.87 (.98)	4.39 (1.19)

Note. Numbers in parentheses are standard deviations. Higher means indicate higher perceived innovativeness, purchase intention, attitude towards the product, and attitude towards the ad. Theoretical scales ranges for all measures were 1 to 7.

Table 3-2: Means and standard deviations in study 1 (in order of hypotheses testing)

3.2.6 Summary of Results

The first study investigated the effect of processing fluency on perceived innovativeness, purchase intention, attitude towards the product and attitude towards the ad. Although both men and women perceived an increase in informational

complexity without perceiving the relevancy of information higher in the condition with more information, interpretations of fluency experiences were different. It was hypothesized, that in the context of technological innovations, men would follow a reversed fluency effect, i.e., the more complex the information provided the better. Although not all hypotheses could be supported, the results provide initial support that men preferred metacognitive difficulty and women followed the usual fluency-liking link. Apparently, there are differences in naïve beliefs. However, the study could not clarify if the assumption is true that men prefer metacognitive difficulty because they think that innovations are mostly complex at the beginning. Hence, there is need to explicitly explore potential naïve beliefs independent from the biological gender.

3.3 Study 2

Study 1 manipulated metacognitive difficulty by increasing the quantity of information. The second study has the objectives to replicate the first study in terms of fluency manipulation and to introduce a naïve belief about innovations as a substituting factor for biological gender. The focus is laid on the dependent measures of perceived innovativeness, attitude towards the product, and purchase intention. Whereas in the first study it was just assumed that men follow the belief that innovations seem mostly complex at the beginning, the second study will test the influence of this naïve belief directly. The naïve belief that ‘innovations seem mostly complex at the beginning’ expresses that people have made the experience that when they encounter an innovation the first time it seems complex; if people hold that belief, they might even appreciate information complexity, i.e., metacognitive difficulty, because they are used to it. If, in contrast, people do not follow this naïve belief, they should prefer an advertisement simple in information complexity. Hence, I hypothesize:

H_{5a-f}: Participants who follow the naïve belief will (a) perceive a product as more innovative, (b) respond more favorably to the product and (c) show higher purchase intentions when metacognitive difficulty increases; participants who do not follow the naïve belief will (d) perceive a product as more innovative, (e) respond more favorably to the product and (f) show higher purchase intentions when metacognitive difficulty decreases.

Furthermore, research suggested that if a reasonable explanation for metacognitive difficulty is externally offered, subjects should use this explanation to interpret their

fluency experiences (Brinol et al., 2006). In study 1, the advertisement included a design element that said ‘new’ to account for external validity, that is, professional advertisement design. Although this design element alone should not have influenced consumers’ responses in a way that they used it as a reasonable explanation for metacognitive difficulty, better internal validity is required. Hence, the second study introduces conditions without and with an ‘innovativeness claim’: the copy text explicitly states that the product is innovative. In the presence of an innovativeness claim, the negative effect of metacognitive difficulty should be diminished for people who do not hold the proposed belief, whereas the positive effect of metacognitive difficulty should be increased for people who agree with the proposed belief. Hence, it is hypothesized:

H_{6a-f} : If participants who hold the naïve belief are presented with an innovativeness claim, they will (a) perceive a product as more innovative, (b) respond more favorably to the product and (c) show higher purchase intentions when metacognitive difficulty increases; if participants who do not hold the naïve belief are presented with an innovativeness claim, the negative effect of metacognitive difficulty on (d) perceived innovativeness, (e) attitude towards the product and (f) purchase intention will diminish.

The framework from study 1 is refined and complemented by two moderators and replaces gender with the individual naïve belief.

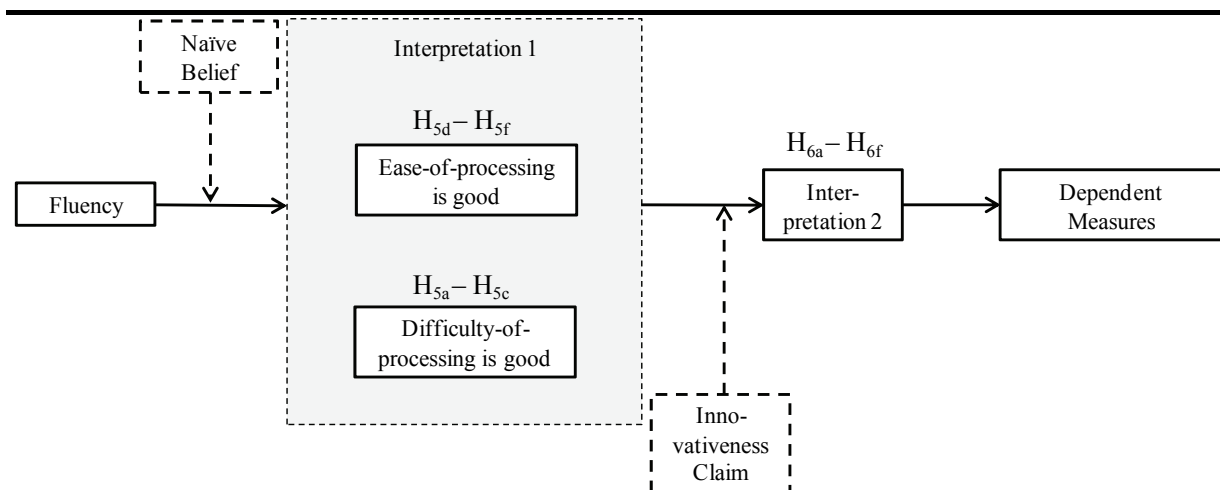


Figure 3-7: Framework of study 2

3.3.1 Design, Subjects, and Procedure

219 German consumers participated in an online-experiment. Largely following the procedure of study 1, the stimulus and the questionnaire were designed to be read and completed within six minutes on average. Since online-studies provide the opportunity to measure duration, subjects who needed less than two minutes or more than 12 minutes were excluded from further analysis, which resulted in 196 cases. 54.1 percent women and 45.9 men within a 20-to-42-years-old range were left in the final sample. The majority of them, 68.4 percent, held a degree of secondary education, 24.5 percent finished high-school, and 6.6 percent held a university degree. Most of the participants were company employees or public officers (55.6 percent) and 20.9 percent were still in school. 18.4 percent of the participants had a household net income per month under 1.500 Euro, 16.8 percent between 1.500 and 2.000 Euro, 23 percent 2.000 to 2.500 Euro, 30.6 percent 2.500 to 3.800 Euro and 10.7 percent more than 3.800 Euro. There were 47 to 54 participants per cell of this 2 Fluency (high vs. low) \times 2 Innovativeness Claim (without vs. with an innovativeness claim) between-subjects design. Subjects were first presented with the advertisement that could be read in a self-paced manner. Then they were asked to fill in the questionnaire. The naïve belief about innovations was introduced as a continuous variable. Participants were asked to rate the statement *Innovations seem mostly complex at the beginning. – strongly disagree/strongly agree* at the end of the questionnaire (cf. Pocheptsova et al., 2010). Finally, they were asked to provide demographic data.

3.3.2 Development of Stimuli

Again, an innovative product from the category of consumer electronics was chosen: a tablet-PC (referred to as Tablet-PC). At the time of the study, this kind of Tablet-PC had not been introduced to the market yet. In a pretest, participants rated the product as unfamiliar, the mean being significantly lower than the scale midpoint ($M = 1.86$; $t(34) = 7.78$, $p < .001$). The copy text was designed according to the first study; based on real product descriptions, copy texts with two levels of information fluency were created. A copy text high in fluency contained 92 words whereas a copy text low in fluency contained 205 words. In a pretest, participants evaluated the fluency with which they could process the copy text. In order to strengthen the fluency measurement, two items were added (*I think the advertisement information is... – easy to comprehend/difficult to comprehend.*; *How much time did you need to read the advertisement text? – not much time/lots of time.*; *How exhausting was it to read the*

advertisement text? – not exhausting at all/very exhausting.; $\alpha = .77$). The pretest deemed the manipulation to be successful ($M_{high_fluency} = 2.29$ vs. $M_{low_fluency} = 3.02$; $t(33) = 2.14$, $p < .05$). Again, the confound check of the relevancy of information revealed that participants did not significantly find the information in the copy text low in fluency more relevant or helpful than the information in the short copy text ($M_{high_fluency} = 5.05$ vs. $M_{low_fluency} = 4.75$; $t(33) = .93$, $p > .54$). In order to further simplify the design, the advertisement showed only a picture of the product and the copy text. A hypothetical brand name was chosen ('TM3000'). In the innovativeness claim condition, the copy text said in the first sentence 'the new, innovative TM3000'. Both words were slightly highlighted by coloring them in blue and increasing the font size by one point (from 11.5 to 12.5 pt).



Figure 3-8: *Experimental stimuli used in study 2 (ad high in fluency vs. ad low in fluency)*

3.3.3 Selection of Dependent Measures

Participants were first asked to rate perceived innovativeness, then attitude towards the product, and purchase intention. The dependent measures perceived innovativeness ($\alpha = .92$) and attitude towards the product ($\alpha = .92$) were adopted from the first study. Purchase intention was measured with a single item on a seven-point scale (*How interested are you in buying this product as soon as it may become available? – not at all interested/very interested*).

3.3.4 Results

Following Aiken and West (1991) and the procedure proposed by Pocheptsova et al. (2010), regression analyses were performed on the dependent variables perceived innovativeness, attitude towards the product and purchase intention with dummy variables of the experimental manipulations (information fluency: 0 = high fluency, 1 = low fluency; innovativeness claim: 0 = without innovativeness claim, 1 = with innovativeness claim), the continuous variable naïve belief about innovations and their respective interactions. Results are presented alongside the dependent measures. Table 3-3 summarizes the standard coefficients for the main regressions.

Effects of Fluency, Innovativeness Claim and Naïve Belief on Dependent Measures			
	Perceived Innovativeness	Attitude Towards the Product	Purchase Intention
<i>Fluency (dummy)</i>	-.74**	-1.01***	-.77**
<i>Inno Claim (dummy)</i>	-.66**	-.49 (n.s.)	-.17 (n.s.)
<i>Naïve Belief</i>	-.14 (n.s.)	-.17 (n.s.)	-.15 (n.s.)
<i>Two-way Interaction (Fluency*Inno Claim)</i>	.33 (n.s.)	.39 (n.s.)	-.07 (n.s.)
<i>Two-way Interaction (Fluency*Naïve Belief)</i>	.60*	.88***	.66*
<i>Two-way Interaction (Inno Claim*Naïve Belief)</i>	.60*	.44 (n.s.)	.14 (n.s.)
<i>Three-way Interaction (Fluency*Inno Claim*Naïve Belief)</i>	-.22 (n.s.)	-.26 (n.s.)	.17 (n.s.)
<i>Adjusted R²</i>	.06	.07	.05
*** $p < .01$			
** $p < .05$			
* $p < .1$			

Table 3-3: Standardized coefficients in study 2

3.3.4.1 *Perceived Innovativeness*

The results revealed a significant direct effect of information fluency ($b = -.74$, $SE = .84$, $t(188) = -2.22$, $p < .05$), a significant direct effect of innovativeness claim ($b = -.66$, $SE = .79$, $t(188) = -2.10$, $p < .05$), a significant interaction between information fluency and innovation belief ($b = .60$, $SE = .17$, $t(188) = 1.79$, $p < .1$) and a significant interaction between innovativeness claim and innovation belief ($b = .60$, $SE = .16$, $t(188) = 1.88$, $p < .1$) on perceived innovativeness. All other effects were not significant (all $ps > .3$). To follow up results, two groups of innovation belief were created based on a median split (cf. Pocheptsova et al., 2010), one group that did not believe that innovations are complex at the beginning and one that did. It could not be shown that metacognitive difficulty had a positive effect on participants who believed an innovation was complex. Results revealed that the effect of metacognitive difficulty attenuated ($b = .05$, $SE = .30$, $t(57) = .36$, $p = .72$). The fluency-liking link could be found for participants that did not hold the innovation belief ($b = -.20$, $SE = .20$, $t(135) = -2.33$, $p < .05$); metacognitive difficulty had a negative effect on participants who did not believe that innovations were complex at the beginning. Although the three-way interaction was not significant, it was necessary to investigate how metacognitive difficulty affected participants in the different experimental conditions in order to obtain a clearer picture of the results and support or reject the hypotheses. Analyses only produced a significant negative effect of metacognitive difficulty on participants who were not presented with an innovativeness claim and did not hold the innovation belief ($b = -.27$, $SE = .32$, $t(60) = -2.13$, $p < .05$), supporting H_{5d} . No other significant results were obtained, but a look at the standardized coefficients revealed that the negative effect of metacognitive difficulty either attenuated or changed into a statistically non-significant but small positive effect. In particular, participants who hold the innovation belief but were not presented with an innovativeness were not affected at all ($b = .00$, $SE = .43$, $t(32) = .00$, $p = 1$) by metacognitive difficulty; when an innovativeness claim was present, participants with an innovation belief were slightly positively affected ($b = .14$, $SE = .41$, $t(23) = .68$, $p = .50$). Although H_{5a} and H_{6a} could not be supported, results pointed in the hypothesized direction. Furthermore, participants without an innovation belief who were presented with an innovativeness claim were less negatively affected by metacognitive difficulty than the group not presented with an innovativeness claim ($b = -.12$, $SE = .28$, $t(73) = 1.04$, $p = .30$). Hence, H_{6d} could be supported.

3.3.4.2 *Attitude Towards the Product*

The analyses showed a significant direct effect of information fluency ($b = -1.01$, $SE = .90$, $t(188) = -3.03$, $p < .01$) and a significant interaction of fluency and naïve belief ($b = .88$, $SE = .18$, $t(188) = 2.62$, $p < .01$) on attitude towards the product. Spotlight analysis in the two naïve-belief-groups revealed that metacognitive difficulty had a negative effect on persons who did not think that an innovation is complex ($b = -.23$, $SE = .22$, $t(135) = -2.80$, $p < .01$). Participants, in contrast, who hold that belief were not affected ($b = .13$, $SE = .32$, $t(57) = .99$, $p = .33$), i.e., the negative effect of metacognitive difficulty attenuated. Further investigation of differences between the single experimental conditions showed that participants holding the innovation belief were slightly positively but not significantly affected by metacognitive difficulty in the absence ($b = .15$, $SE = .43$, $t(32) = .84$, $p = .41$) as well as the presence of an innovativeness claim ($b = .12$, $SE = .51$, $t(23) = .58$, $p = .57$). H_{5b} and H_{6b} could not be supported. It was only participants who did not hold the proposed innovation belief and who were not presented with an innovativeness claim who were significantly negatively affected by metacognitive difficulty ($b = -.39$, $SE = .29$, $t(60) = -3.25$, $p < .01$), supporting H_{5e} . Participants, who were presented with an innovativeness claim, were only slightly but not significantly negatively affected ($b = -.18$, $SE = .33$, $t(73) = -1.01$, $p = .32$), supporting H_{6e} .

3.3.4.3 *Purchase Intention*

Regression analyses on purchase intention produced a significant direct effect of informational fluency ($b = -.77$, $SE = .118$, $t(188) = -2.27$, $p < .05$) and a significant interaction of fluency and naïve belief ($b = .66$, $SE = .24$, $t(188) = 1.95$, $p < .1$). All other effects were non-significant (all $ps > .60$). Single analyses revealed that participants who did not hold the proposed naïve belief were significantly negatively affected by metacognitive difficulty ($b = -.24$, $SE = .27$, $t(135) = -2.87$, $p < .01$) whereas the effect attenuated when participants hold the naïve belief ($b = .17$, $SE = .48$, $t(57) = 1.30$, $p = .19$). To follow up on these effects, regressions were performed for the single experimental conditions. Metacognitive difficulty had a significant positive effect on purchase intention of participants who hold the innovation belief and were presented with an innovativeness claim in the copy text ($b = .43$, $SE = .63$, $t(23) = 2.28$, $p < .05$). The effect of metacognitive difficulty fully diminished, when participants that held the innovation belief were not presented with an innovativeness claim ($b = .02$, $SE = .67$, $t(32) = .09$, $p = .93$). Hence, whereas H_{5c} could not be supported, H_{6c} could. For people who did not hold the proposed naïve belief, results

revealed that a significant negative effect of metacognitive difficulty could hold for individuals who were presented either without ($b = -.26$, $SE = .38$, $t(60) = -2.09$, $p < .05$) or with an innovativeness claim whereas the effect was slightly reduced ($b = -.22$, $SE = .40$, $t(73) = -1.92$, $p < .1$). Hence, H_{5f} could be supported, whereas H_{6f} could not be supported (the negative effect was still significant).

To illustrate the results in the single experimental conditions, Table 3-4 summarizes the means of the dependent variables.

	High Fluency			
	Without Innovativeness Claim		With Innovativeness Claim	
	Low in Innovation Belief	High in Innovation Belief	Low in Innovation Belief	High in Innovation Belief
Perceived Innovativeness	4.72 (1.31)	4.80 (1.36)	4.24 (1.39)	5.09 (1.21)
Attitude Towards the Product	5.24 (1.08)	5.09 (1.46)	4.77 (1.59)	5.56 (1.57)
Purchase Intention	4.16 (1.48)	4.18 (2.07)	4.00 (1.87)	4.23 (1.92)
	Low Fluency			
	Without Innovativeness Claim		With Innovativeness Claim	
	Low in Innovation Belief	High in Innovation Belief	Low in Innovation Belief	High in Innovation Belief
Perceived Innovativeness	4.04 (1.21)	4.80 (1.12)	3.95 (.99)	5.37 (.73)
Attitude Towards the Product	4.29 (1.22)	5.44 (.95)	4.44 (1.27)	5.85 (.83)
Purchase Intention	3.37 (1.50)	4.24 (1.86)	3.24 (1.56)	5.67 (1.07)

Note. Numbers in parentheses are standard deviations. Higher means indicate higher perceived innovativeness, attitude towards the product, and purchase intention. Theoretical scales ranges for all measures were 1 to 7.

Table 3-4: Means and standard deviations of dependent variables in study 2

3.3.5 Summary of Results

In sum, the hypotheses could be partly supported. Participants who did not hold the belief that innovations seem mostly complex at the beginning followed the usual fluency-liking link. They perceived a product as more innovative, showed an increased

attitude towards the product, and showed increased purchase intention when fluency was high. Findings for participants who followed the belief only revealed a significant positive effect of metacognitive difficulty for purchase intention. For the dependent variables perceived innovativeness and attitude towards the product, no significant results could be obtained. The pattern of results still followed the hypothesized direction: participants who held the belief were slightly positively affected by metacognitive difficulty. Interestingly, the presence or the absence of an innovativeness claim produced somewhat mixed results for the dependent measures. The negative effect of metacognitive difficulty on perceived innovativeness and purchase intention of participants who did not hold the belief was slightly diminished in the presence of an innovativeness claim. In contrast, the positive effect of metacognitive difficulty on perceived innovativeness of participants who hold the proposed naïve belief was slightly increased in the presence of an innovativeness claim. Whereas the same pattern could be observed on attitude towards the product for subjects who did not hold the belief, the effect of an innovativeness claim was not different for participants who hold the proposed belief. In sum, the significant direct negative effect of metacognitive difficulty demonstrated that low fluency generally had a very strong negative effect on evaluations. Additionally, results revealed that this effect could be attenuated or even reversed when two sources of naïve beliefs were addressed: chronic beliefs within the individual and an externally motivated belief. The insignificance of results may be partly due to the split by median that inhibits some flaws, such that participants are not equally distributed across groups. Moreover, the effect of an innovativeness claim in a relatively long copy text might be also weakened; two words might not be very salient when presented in a long copy text.

In study 1, gender differences were discussed. In study 2, a naïve belief was introduced to detect differences that are not based on biological gender. In study 1, it was proposed that one plausible explanation for gender differences could be their differences in naïve beliefs, suggesting that men would respond positively to metacognitive difficulty. To follow up this assumption, several post-hoc tests were conducted. First, a t-test was performed. Surprisingly, results revealed that women agreed slightly higher to the statement that innovations seem mostly complex at the beginning. ($M_{women} = 4.75$ vs. $M_{men} = 4.32$; $t(194) = 2.05$, $p < .05$). Further, a chi-square test supported this difference ($\chi^2(1) = 4.35$, $p < .05$). Whereas there were 48.5 percent of women and 51.1 percent of men in the group that did not agree to the proposed belief, there were 64.6 percent of women and only 35.4 percent of men in the group, which agreed to the belief. Although study 2 excluded biological gender as a

factor, it has to be noted that these results do not support the assumption in study 1 that the reason why men responded more favorably to metacognitive difficulty lied in the belief that innovations seemed mostly complex at the beginning. Possible sources and explanations for this rather counterintuitive result will be discussed in chapter 3.5.

3.4 Study 3

Studies 1 and 2 investigated fluency experiences based on the quantity of information. Existing research on fluency theory has not investigated this effect; the results obtained in these studies give reason to think of quantity of information as being a source of fluency experiences. Still, manipulating fluency experiences based on information complexity holds some potential flaws. First, although the confound check of relevancy of information deemed the manipulation to be successful, effects stemming from the content of information could not be fully excluded. Second, the results of the manipulation show that fluency experiences based on informational complexity are somewhat hard to obtain. Although the analysis produced a significant difference in fluency between low and high information complexity, both means stayed below the midpoint of the scale. Study 3 has the objective to replicate these findings conceptually, using a different manipulation. A common fluency manipulation is font complexity. Existing research has shown that results based on font manipulation are stable (e.g., Reber & Zupanek, 2002; Simmons & Nelson, 2006; Novemsky et al., 2007; Alter & Oppenheimer, 2008; Pocheptsova et al., 2010). In their conference paper, Cho and Schwarz (2006) found that participants low in need for cognition attributed metacognitive difficulty stemming from font manipulation to perceived product innovativeness, arguing that these participants must have followed the naïve belief that something that they did not understand, must be new. Pocheptsova et al. (2010) showed that metacognitive difficulty resulting from font complexity was attributed to product exclusivity. If participants held the belief that ‘chocolate truffles are for special occasions’, they showed higher purchase intentions when fluency was low. As elaborated in chapter 2.1.2, this research argues that participants should attribute metacognitive difficulty to perceived innovativeness, either when a reasonable explanation is offered externally, if participants hold a certain naïve belief or when both are present. In designing the experimental stimuli, study 3 primarily follows the outline provided by Pocheptsova et al. (2010). The advertisements will use an easy- and a difficult-to-process font. An innovativeness claim, as in study 2, will be added. As shown in study 2, the measurement of a naïve belief provides a sufficient approach to account for individual difference in the interpretation of fluency

experiences. In this study, another naïve belief will be introduced, which corresponds with the one by Pocheptsova et al. (2010), but will be adjusted to an innovation context: ‘Consumer electronics are mostly innovative.’ This naïve belief expresses that consumers who hold this belief have made the experience that the product category of consumer electronics offers innovative products. It also implies that if people are used to innovative product in this category, they should rather appreciate metacognitive difficulty because it signals novelty. The hypotheses follow the ones from study 2:

H_{7a-f}: Participants who follow the naïve belief will (a) perceive a product as more innovative, (b) respond more favorably to the product and (c) show higher purchase intentions when metacognitive difficulty increases; participants who do not follow the naïve belief will (d) perceive a product as more innovative, (e) respond more favorably to the product and (f) show higher purchase intentions when metacognitive difficulty decreases.

H_{8a-f}: If participants who hold the naïve belief are presented with an innovativeness claim, they will (a) perceive a product as more innovative, (b) respond more favorably to the product and (c) show higher purchase intentions when metacognitive difficulty increases; if participants who do not hold the naïve belief are presented with an innovativeness claim, the negative effect of metacognitive difficulty on (d) perceived innovativeness, (e) attitude towards the product and (f) purchase intention will diminish.

3.4.1 Design, Subjects, and Procedure

430 German consumers participated in a second online-experiment. Again, participants who needed less than two minutes or more than 12 minutes were excluded from further analysis, which resulted in 363 cases. The final sample had 51.5 percent women and 48.5 percent men within a 19-to-41-years-old range. The majority of them, 68 percent, held a degree of secondary education, 25.6 percent finished high school, and 4.7 percent held a university degree. Most of the participants were company employees or public officers (52.1 percent) and 21.8 percent were still in school. 19.8 percent of the participants had a household net income per month under 1.500 Euro, 19.8 percent between 1.500 and 2.000 Euro, 18.5 percent 2.000 to 2.500 Euro, 28.7 percent 2.500 to 3.800 Euro and 13.2 percent more than 3.800 Euro. There were 35 to 59 participants per cell of this 2 Product (Tablet-PC vs. E-Reader) × 2 Fluency (high

vs. low) \times 2 Innovativeness Claim (without vs. with an innovativeness claim) between-subjects design. Subjects were first presented with the advertisement that could be read in a self-paced manner. Then they were asked to fill in the questionnaire. The naïve belief about innovations was introduced as a continuous variable. Participants were asked to rate the statement *Consumer electronics are mostly innovative. – strongly disagree/strongly agree* at the end of the questionnaire on a seven-point scale (cf. Pocheptsova et al., 2010).

3.4.2 Development of Stimuli

The products from study 1 and study 2, the E-Reader and the Tablet-PC, were used for the third study. The copy texts corresponded with the versions high in information fluency from study 1 and study 2. The ad for the E-Reader was adjusted so that the brand name was changed into ‘DR3000’, the design was adopted from study 2 and the copy text was slightly, but not significantly, changed. In the easy-to-read font condition participants were presented with an advertisement copy text printed in a regular font (Arial, 12pt) in black color. Participants in the difficult-to-read font condition read the copy text in the same font but in an embossed grey color (for example, see Novemsky et al., 2007; Pocheptsova et al., 2010). An online-pretest with 46 consumers stemming from the same sample as in the main study was conducted to show that the font indeed manipulated fluency experiences. A within-subjects design was chosen with the product as the within-factor and fluency as the between-factor; subjects received both products with the same fluency manipulation in a randomized order. Participants were asked to rate the fluency with which the font could be read on a three-item, seven-point differential scale (*How easy or difficult was it to read the advertisement text? – very easy/very difficult.; How much time did you need to read the advertisement text? – not much time/lots of time.; How exhausting was it to read the advertisement text? – not exhausting at all/very exhausting.; $\alpha_{Tablet-PC} = .95$ and $\alpha_{E-Reader} = .95$). The manipulation could be deemed successful for both products, indicating that individuals perceived the regular font as more easy to read than the embossed grey font (Tablet PC: $M_{high_fluency} = 2.37$ vs. $M_{low_fluency} = 4.52$; E-Reader: $M_{high_fluency} = 2.51$ vs. $M_{low_fluency} = 4.90$; $F(44) = 31.02$, $p < .001$) with no differences found between products (all $ps > .17$). An innovativeness claim was again introduced, following the design of study 2.*



Figure 3-9: Experimental stimuli used in study 3 (ad high in fluency vs. ad low in fluency)

3.4.3 Selection of Dependent Measures

The dependent measures perceived innovativeness ($\alpha = .92$), attitude towards the product ($\alpha = .94$), and purchase intention were adopted from the first and second study.

3.4.4 Results

The results were obtained following the procedure described in study 2 for the single products to detect any differences between them. Table 3-5 and Table 3-6 summarize the standard coefficients of the main regressions. Results are presented alongside the dependent measures.

**Effects of Fluency, Innovativeness Claim and Naïve Belief on Dependent Measures
(Tablet-PC)**

	Perceived Innovativeness	Attitude Towards the Product	Purchase Intention
<i>Fluency (dummy)</i>	.21 (n.s.)	.28 (n.s.)	.17 (n.s.)
<i>Inno Claim (dummy)</i>	.44 (n.s.)	1.03***	.45 (n.s.)
<i>Naïve Belief</i>	.70***	.87***	.52***
<i>Two-way Interaction (Fluency*Inno Claim)</i>	-.11 (n.s.)	-.19 (n.s.)	-.04 (n.s.)
<i>Two-way Interaction (Fluency*Naïve Belief)</i>	-.31 (n.s.)	-.45 (n.s.)	-.17 (n.s.)
<i>Two-way Interaction (Inno Claim*Naïve Belief)</i>	-.42 (n.s.)	-1.19***	-.37 (n.s.)
<i>Three-way Interaction (Fluency*Inno Claim*Naïve Belief)</i>	.15 (n.s.)	.42 (n.s.)	.08 (n.s.)
<i>Adjusted R²</i>	.27	.32	.18

*** $p < .01$

** $p < .05$

* $p < .1$

Table 3-5: Standard coefficients in study 3 (Tablet-PC)

**Effects of Fluency, Innovativeness Claim and Naïve Belief on Dependent Measures
(E-Reader)**

	Perceived Innovativeness	Attitude Towards the Product	Purchase Intention
<i>Fluency (dummy)</i>	-.16 (n.s.)	-.56*	-.12 (n.s.)
<i>Inno Claim (dummy)</i>	.47 (n.s.)	-.75**	-.48 (n.s.)
<i>Naïve Belief</i>	.41***	.09 (n.s.)	.13 (n.s.)
<i>Two-way Interaction (Fluency*Inno Claim)</i>	.61 (n.s.)	.86**	.11 (n.s.)
<i>Two-way Interaction (Fluency*Naïve Belief)</i>	.25 (n.s.)	.48 (n.s.)	.12 (n.s.)
<i>Two-way Interaction (Inno Claim*Naïve Belief)</i>	.54 (n.s.)	.87**	.55 (n.s.)
<i>Three-way Interaction (Fluency*Inno Claim*Naïve Belief)</i>	-.63 (n.s.)	-.80*	-.11 (n.s.)
<i>Adjusted R²</i>	.26	.19	.13
*** $p < .01$			
** $p < .05$			
* $p < .1$			

Table 3-6: Standard coefficients in study 3 (E-Reader)

3.4.4.1 Perceived Innovativeness

A regression performed on perceived innovativeness revealed that, for the Tablet-PC, there was only a significant direct effect of the naïve belief ($b = .70$, $SE = .11$, $t(196) = 5.46$, $p < .001$). All other effects were not significant (all $ps > .15$). For the E-Reader, similar results were obtained: only the direct effect of innovation belief was significant ($b = .40$, $SE = .12$, $t(151) = 2.78$, $p < .01$) but all other effects were not significant (all $ps > .60$). Although the effects were non-significant, further regressions were performed to explore the results in the single experimental conditions. Therefore, a median split of the continuous variable naïve belief was performed. Regressions revealed that participants who evaluated the E-Reader, who did not believe that

consumer electronics are innovative and who received an innovativeness claim in the copy text were the only participants significantly affected by metacognitive difficulty. The effect was however contrary to expectations in that it was positive ($b = .27$, $SE = .25$, $t(54) = 2.07$, $p < .05$). All other effects were non-significant (all $ps > .45$). Hence, H_{7a} , H_{7d} , H_{8a} and H_{8d} could not be supported.

3.4.4.2 *Attitude Towards the Product*

For the Tablet-PC, a regression analysis on attitude towards the product produced significant main effects of the innovativeness claim ($b = 1.02$, $SE = .89$, $t(196) = 3.41$, $p < .01$) and of naïve belief ($b = .87$, $SE = .13$, $t(196) = 6.89$, $p < .001$) and a significant interaction of innovativeness claim and naïve belief ($b = -1.19$, $SE = .18$, $t(196) = -3.71$, $p < .001$). All other effects were found to be non-significant (all $ps > .32$). Exploring the effect of metacognitive difficulty in the single experimental groups, a significant positive effect of metacognitive difficulty was found only for participants that held the naïve belief and were not presented with an innovativeness claim ($b = -.30$, $SE = .46$, $t(29) = -1.71$, $p < .1$), again contrary to expectations. All other effects were not significant (all $ps > .19$).

To follow up the significant interaction, regressions were performed in the different groups of the naïve belief with the independent variable innovativeness claim. It could be demonstrated that only participants who did not hold the belief were significantly affected by the presence of an innovativeness claim in that it increased attitude towards the product ($b = .26$, $SE = .24$, $t(132) = 3.06$, $p < .01$). No significant results were obtained for participants who held the belief, whereas a slightly negative effect could be observed ($b = -.16$, $SE = .31$, $t(68) = -1.32$, $p = .19$).

For the E-Reader, different results were obtained. The direct effects of metacognitive difficulty ($b = -.56$, $SE = .98$, $t(151) = -1.73$, $p < .1$) and innovativeness claim ($b = -.75$, $SE = 1.06$, $t(151) = -2.12$, $p < .05$) were found to be significant. Moreover, the interaction of metacognitive difficulty and innovativeness claim ($b = .86$, $SE = 1.37$, $t(151) = 2.05$, $p < .05$) as well as the interaction of the naïve belief and innovativeness claim ($b = .87$, $SE = .21$, $t(151) = 2.35$, $p < .05$) showed significant results. Furthermore, the three-way interaction was found to be significant ($b = -.80$, $SE = .28$, $t(151) = -1.84$, $p < .1$). To follow up on these results, several regression analyses were performed. Results for the single experimental groups showed no significant effects of metacognitive difficulty on attitude towards the product (all $ps > .19$).

Investigating differences in the effects of metacognitive difficulty between the groups presented with or without an innovativeness claim, no significant results could be obtained. A look at the values of the standardized coefficient revealed that participants who did not receive an innovativeness claim were slightly more negatively affected by metacognitive difficulty ($b = -.16$, $SE = .37$, $t(73) = -1.41$, $p = .16$) than participants who received an innovativeness claim ($b = .00$, $SE = .30$, $t(82) = -.02$, $p = .98$). Furthermore, investigating the significant interaction of innovativeness claim and belief, the effect of the innovativeness claim was not significant, both groups of naïve belief being positively but not significantly affected by the presence of an innovativeness claim (all $ps > .19$).

Hence, H_{7b} , H_{7e} , H_{8b} and H_{8c} could not be supported.

3.4.4.3 *Purchase Intention*

Analyses produced one significant effect of innovation belief on purchase intention in the case of the Tablet-PC ($b = .52$, $SE = .17$, $t(151) = 3.72$, $p < .001$). All other effects were found to be non-significant (all $ps > .17$). Accordingly, exploring the effects in the single experimental groups, the hypothesized effect of metacognitive difficulty on purchase intention could not be found (all $ps > .36$). Hence, H_{7c} , H_{7f} , H_{8c} and H_{8f} could not be supported.

To illustrate the findings, Table 3-7 and Table 3-8 summarize means and standard deviations of the dependent variables in the single experimental conditions for each product.

TABLET-PC

	High Fluency			
	Without Innovativeness Claim		With Innovativeness Claim	
	Low in Innovation Belief	High in Innovation Belief	Low in Innovation Belief	High in Innovation Belief
Perceived Innovativeness	3.79 (1.37)	5.54 (.67)	4.37 (.96)	5.22 (.98)
Attitude Towards the Product	4.03 (1.67)	6.34 (1.00)	4.61 (1.12)	5.21 (1.40)
Purchase Intention	3.04 (1.89)	5.09 (1.58)	3.82 (1.67)	5.05 (1.24)
	Low Fluency			
	Without Innovativeness Claim		With Innovativeness Claim	
	Low in Innovation Belief	High in Innovation Belief	Low in Innovation Belief	High in Innovation Belief
Perceived Innovativeness	3.81 (1.13)	5.11 (1.11)	4.19 (1.00)	5.14 (1.38)
Attitude Towards the Product	3.96 (1.42)	5.56 (1.31)	4.81 (1.27)	5.69 (1.12)
Purchase Intention	3.46 (1.83)	4.60 (1.82)	4.11 (1.37)	5.00 (1.50)

Note. Numbers in parentheses are standard deviations. Higher means indicate higher perceived innovativeness, attitude towards the product, and purchase intention. Theoretical scales ranges for all measures were 1 to 7.

Table 3-7: Means and standard deviations in study 3 (Tablet-PC)

E-READER				
High Fluency				
	Without Innovativeness Claim		With Innovativeness Claim	
	Low in Innovation Belief	High in Innovation Belief	Low in Innovation Belief	High in Innovation Belief
Perceived Innovativeness	3.54 (1.01)	5.11 (1.25)	3.46 (1.04)	5.23 (1.06)
Attitude Towards the Product	4.43 (1.20)	5.23 (1.60)	4.25 (1.35)	5.77 (.81)
Purchase Intention	3.26 (1.71)	4.50 (1.78)	3.22 (1.73)	4.69 (1.80)
Low Fluency				
	Without Innovativeness Claim		With Innovativeness Claim	
	Low in Innovation Belief	High in Innovation Belief	Low in Innovation Belief	High in Innovation Belief
Perceived Innovativeness	3.65 (1.19)	5.19 (.85)	3.98 (.83)	5.11 (1.52)
Attitude Towards the Product	3.88 (1.69)	5.08 (1.87)	4.61 (.97)	5.39 (1.87)
Purchase Intention	3.30 (1.69)	4.30 (2.06)	3.27 (1.66)	4.93 (2.06)

Note. Numbers in parentheses are standard deviations. Higher means indicate higher perceived innovativeness, attitude towards the product, and purchase intention. Theoretical scales ranges for all measures were 1 to 7.

Table 3-8: Means and standard deviations in study 3 (E-Reader)

3.4.5 Summary of Results

Surprisingly, none of the hypothesized effects could be supported. Although the fluency manipulation was deemed fully successful, neither metacognitive ease nor metacognitive difficulty had a strong effect on responses. Hence, findings could support neither the usual fluency liking-link nor the reversed fluency effect. A strong predictor for participants' responses was the proposed naïve belief. In the case of the Tablet-PC, it affected all three dependent measures significantly positively. The more participants agreed to the statement that consumer electronics are mostly innovative, the more innovative they perceived the Tablet-PC, showed increased product preference and purchase intention.

In the case of the E-Reader, the results were mixed. Whereas the naïve belief influenced perceived innovativeness positively, it had no direct effect on attitude towards the product and purchase intention. The innovativeness claim moderated the relationship between metacognitive difficulty and attitude towards the product. Whereas participants who did not receive an innovativeness claim were negatively affected by metacognitive difficulty (not significantly, probably due to the median split), the negative effect fully diminished when they were presented with an innovativeness claim. Although there was a significant three-way interaction, results in the single experimental groups did not fully correspond with the results obtained in study 2. Participants who did not hold the naïve belief and were not presented with an innovativeness claim were negatively (but not significantly) affected by metacognitive difficulty which corresponds with study 2. However, when they were presented with an innovativeness claim, the effect reversed which partly supports H_{8e}. Surprisingly, metacognitive difficulty had no effect on participants who held the belief, which changed into a negative (but not significant) effect when they were presented with an innovativeness claim. It appeared that people who already thought of consumer electronics to be innovations rather rejected an explicit statement.

To follow up on gender differences within the naïve belief, several post-hoc tests were performed. First, a t-test revealed that men slightly believed more that consumer electronic products were innovative ($M_{women} = 4.45$ vs. $M_{men} = 4.93$; $t(361) = 3.01$, $p < .01$). A chi-square test supported this result ($\chi^2(1) = 6.22$, $p < .05$). Whereas there were 56 percent of women and 42 percent of men in the group that did not hold the belief, 44 percent of women and 58 percent of men were in the group that held the naïve belief. These results again confirm the notion that men and women have different ideas about technological innovations. Although it could be shown that this naïve belief affected consumers' responses, it could not be confirmed that the proposed belief is a stable source for (mis)attributions of fluency experiences. These results are discussed in chapter 3.5.

3.5 Discussion

3.5.1 Theoretical Contributions

First, this research clearly contributes to knowledge on the diversity of fluency manipulations. In an attempt to manipulate fluency experiences based on informational complexity, it could be shown that the quantity of information can account for fluency

experiences. Although it could be argued that quantity and quality of information are confounded, common sense suggests that sometimes ‘it can be said a lot without saying a lot’. An influence of content could be excluded to the extent that the confound check clearly indicated that participants rated the information equally relevant and useful. Furthermore, the results from studies 1 and 2 provide insights about the reversal of the usual fluency-liking link. It could be shown that due to personal characteristics, such as gender in study 1 or the naïve belief in study 2, metacognitive difficulty had a positive effect.

Second, the results of the studies contribute to research on fluency and naïve beliefs in an innovation context but also raise questions that have to be addressed in future research (see section 3.5.4).

Third, this work sheds light on gender differences in information processing. Following findings from research on information processing, one may suggest that differences between men and women occurred in the first study because of different processing strategies in that women preferred relation-oriented information and men favored attribute-oriented information (Putrevu, 2004). Although only the quantity of information was manipulated, it may be argued that the choice of which information content was presented promoted gender differences in study 1. Specifically, the copy text was based primarily on attribute information, describing the product rather than creating relations to existing products. The second study therefore replicated the manipulation of the first study. However, instead of investigating the biological gender, a naïve belief was introduced that was suggested to primarily, but not exclusively, hold for men (*Innovations are mostly complex at the beginning.*). Subjects who held this belief were hypothesized to favor metacognitive difficulty, which could be partly supported. Surprisingly, post analyses revealed that women agreed slightly more to this naïve belief, suggesting that they were positively affected by metacognitive difficulty. Neither study 1 nor study 2 could support findings from research on information processing, and therefore, a dominant influence of content could be excluded. On the one hand, according to the selectivity hypothesis, women should have responded more favorably to complex ad content, which was not the case in study 1. On the other hand, women should have responded more negatively to attribute-related content, which was apparently not the case in study 2. Although studies 1 and 2 produced different results, they still provide support for the notion that first, fluency experiences affect responses to advertisements independent from the declarative content, and that second, the interpretation of fluency experiences in specific contexts may be based on gender differences and differences in naïve beliefs.

These results call for further investigation of gender differences in the interpretation of fluency experiences in an innovation context, which will be discussed in section 3.5.4.

3.5.2 Managerial Implications

This research provides managerial implications in two ways. First, it advises advertisers to consider metacognitive experiences that arise from the ease or difficulty of processing when creating advertisement campaigns for innovations. The first and the second studies support the idea that communicating innovations as simply as possible is not necessarily sufficient. Different from the study of Pocheptsova and colleagues (2010) who showed that metacognitive difficulty enhanced the attractiveness of an exclusive product, this work could not show that metacognitive difficulty improved new product evaluation at all events. Outcomes were instead dependent on the target group and on context-specific factors such as the innovativeness claim.

Second, gender differences are important factors in marketing technological products. Over the past years, practitioners have acknowledged that ‘painting it pink’ does not suffice to reach women. As a result, not only do companies work on their products to adjust to women, but also change the way of communication. For example, the motorcycle company Harley-Davidson offers smaller motorcycles for women and a female club. Thereby, the company’s method of communication is not ‘pink’, but still fits its tough biker image. However, the studies could also show that gender differences as a segmentation tool should not be overestimated. Segmenting consumers according to their naïve beliefs seems to provide an even superior approach to the differentiation by biological gender. On the one hand, it improves our understanding of why consumers judge a novel product as more or less innovative. Even the third study, which could not find differences in interpretations of metacognitive experiences, but demonstrated partly a direct effect of the naïve belief, suggests that knowledge about naïve beliefs helps to better describe target groups. On the other hand, integrating naïve beliefs that are different between genders offers a new and easy way of better understanding men and women. Marketers should therefore consider naïve beliefs that people hold about specific consumption domains.

3.5.3 Limitations

Several limitations of this research have to be noted. First of all, since it generally requires more words to communicate more information, the content and length of the

copy were somewhat confounded (Putrevu et al., 2004). This restriction was accounted for by ensuring that no information about any additional benefit was presented in the ad high in information complexity (low in fluency). Furthermore, the confound check provided evidence that the information in the ad low in fluency was not more relevant or helpful for participants. Note that this self-report measure has to be interpreted with caution. Further research on informational complexity should therefore include a more objective measure of benefit comprehension (cf. Roehm & Sternthal, 2001).

Second, researching new product evaluation generally holds some limitations to the extent that products that stem from the category of consumer electronics may appear to be comparable but also differ to some extent. Although the E-Reader and the Tablet-PC are very close in their attributes and features, different results were obtained. Many studies on innovation commercialization are confronted with problems of comparability between products. Further research is advised to integrate more factors in testing to find reasonable criteria in comparing different technological products.

3.5.4 Future Research

First, the different results of responses to metacognitive difficulty call for further investigating the effects of fluency manipulations in innovation research. Note that this work also found that perceived innovativeness decreased with metacognitive difficulty. In contrast, other researchers demonstrated that in some consumption contexts, metacognitive difficulty increased a particular dependent variable, exclusivity for example (Pocheptsova et al., 2010), at all events. Particularly the results of the third study raise questions: on the one hand, the findings call into question if fluency experiences stemming from font manipulation affect responses towards innovations or if other dependent variables are more affected than the investigated ones, such as uniqueness, exclusivity or risk. On the other hand, a potential failure source in study 3 could be the proposed belief. The procedure and the set-up of the study were adopted from Pocheptsova et al. (2010) but adapted to an innovation context. However, note that Pocheptsova et al. (2010) proposed that metacognitive difficulty was attributed to exclusivity at all events but that the effect on purchase intention (a positive outcome) was moderated by the belief that chocolate truffles were exclusive. Hence, exclusivity served as a mediator between metacognitive difficulty and purchase intention whose relationship was moderated by the naïve belief. In this study, perceived innovativeness was not proposed to be a mediator whose effect on purchase intention was moderated by a naïve belief. Rather, perceived innovativeness and purchase intention, both positively marked outcomes, were hypothesized to follow

the same pattern of results. Further research should therefore consider further variables that could serve as a mediator for the relationship between metacognitive difficulty and perceived innovativeness, such as uniqueness, novelty or affective responses. However, it still seems counterintuitive that the dependent measures in study 3 were affected by metacognitive difficulty barely or not at all. A potential source could be the difference in cognitive resources dedicated to a judgment task, as found by Cho and Schwarz (2006), so that participants high in need for cognition did not use their fluency experiences for judgments. Further research should therefore integrate the dedication of cognitive resources in fluency research (cf. section 5.5.2.2).

Second, in investigating naïve beliefs, some theoretical issues arise, for example on the fit of expectations (cf. Pocheptsova et al., 2010). One may argue that especially in the second study the investigated naïve belief (*Innovations seem mostly complex at the beginning*) also measures an expectation towards innovations. Based on existing research, this approach would imply that people who hold this expectation would expect higher metacognitive difficulty in the context of innovations and derive value from the fit between their expectation and the stimulus rather than from fluency experiences (Kim, Rao, & Lee, 2009). If this was the case, people who agreed to the statement of the naïve belief should have generally perceived higher fluency, independent from the manipulation. However, the naïve belief ($b = -.04$, $SE = .07$, $t(192) = -.43$, $p > .66$) and the interaction of the manipulation and the belief ($b = -.05$, $SE = .14$, $t(192) = .22$, $p > .82$) did not affect fluency experiences. Therefore, it could be concluded that people who *relied on their experience* that innovations seemed more complex at the beginning did not *expect* higher metacognitive difficulty of advertisements.

Another issue that has to be considered when further investigating naïve beliefs is gender differences. Whereas the first study rather confirmed the notion that men may generally respond more favorably to metacognitive difficulty than women, the second and the third study could not replicate this effect. Specific naïve beliefs were investigated and a post analysis revealed that women and men did differ in these naïve beliefs, but not necessarily as expected. This was particularly noticeable when the first naïve belief stated that innovations seem rather complex at the beginning. Post analyses showed that there was a slight but significant difference between genders, with women tending to support this view in contrast to men. Note that studies 2 and 3 did not explicitly investigate gender differences; however, further investigation seems worthwhile. A possible explanation of the different results may be found in the social desirability perspective. Whereas in the first experiment students filled in the

questionnaire in a classroom, sitting mostly next to friends, the second was conducted online. For example, Fisher and Dubé (2005) found that emotional responses of men were only different to these of women in the presence of a male friend. They demonstrated that males reported the same levels of emotions as females when they were on their own. When another male was present, they felt “a greater need to establish and maintain an agentic image (...)” (Fisher & Dubé, 2005, p. 857). This perspective explains the mixed results to a certain extent: whereas in the first study men seemed to follow a male belief, this effect was somewhat diminished in the second study. Still, this perspective does not explain the different results for women. Interestingly, in the third study women and men differed in judgments about the naïve belief that products from the category of consumer electronics are oftentimes innovative. Men agreed to this statement. However, this naïve belief did not influence the interpretation of metacognitive difficulty. Further examining naïve beliefs of men and women and group influences seem worthwhile in the context of innovations. Further research should thereby consider the role of social desirability in the application of naïve theories.

Third, existing research has found that psychological rather than biological gender differences may account for different responses of males and females “[...], as gender groups are neither necessarily homogeneous nor isomorphic with biological gender” (Feiereisen, Broderick, & Douglas, 2009, p. 831; cf. Bem, 1974). Although the second and third study investigated naïve beliefs independent from the biological gender, integrating the psychological gender provides areas for further research.

Fourth, research on fluency theory is increasingly recognizing the moderating effects of cognitive resources on the application of fluency experiences in judgment (e.g., Schwarz, 1998; cf. section 5.5.2.2). Since gender research has generally suggested that women process content more thoroughly than men do, the investigation of the interplay of declarative content, metacognitive experiences and gender may shed light on questions that could not be answered by this work. For example, Putrevu (2004) suggested that “advertisers should present category-oriented messages to a female audience and attribute-oriented messages to a male audience. Specifically, ads targeting men should emphasize only the features that are unique to the advertised brand and highlight its differences. In contrast, ads targeting women should focus on features that are common to the product category and highlight how the advertised brand fits in (or compares) with other brands belonging to the category” (p. 60). Note that an experimenter always has to make a choice which content to present in the first place before manipulations are applied. There is a variety of information components

which can be used to design the content of ads and commercials (Stern & Resnik, 1991). Further research is advised to investigate moderating effects of gender attributes on the evaluation of content and fluency experiences. For example, manipulating the content, say one condition with category-oriented messages and another with attribute-related messages, and the introduction of personal attributes like need for cognition or involvement, could shed light on the question of how content and fluency experiences work together for men versus women.

4 Empirical Studies II: The Role of Fluency in Analogical Learning

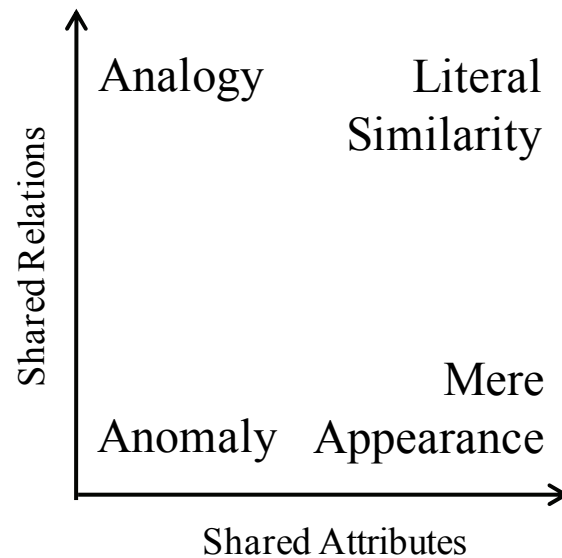
In the search for successful communication strategies for really new products (RNPs), authors have identified analogies (Gregan-Paxton & Moreau, 2003; Hoeffler, 2003; Feiereisen, Wong, & Broderick, 2008). However, “(...) understanding learning processes specific to RNPs as well as the implications for communication message strategy remains low” (Feiereisen, Wong, & Broderick, 2008, p. 59). A critical point in successfully implementing analogies in marketing communications is their composition. In finding criteria, authors have primarily focused on the ability of analogies to convey a novel product’s benefits (e.g., El Houssi, 2010). In an advertising context, however, people rarely match each single correspondence between the source and target analog consciously (Day & Gentner, 2007). This research argues that, depending on how many and what kind of similarities analogs – that are counterparts of an analogy – share (Gentner & Kurtz, 2006), analogies themselves can be either low or high in processing fluency, in particular in the initial encounter in an advertising context. Processing fluency of the analogy in turn affects consumer’s responses. Examining the processing fluency of analogies and thereby focusing on metacognitive experiences in analogical learning can help to find further criteria for the successful composition and implementation of analogies. Following the usual fluency-liking link (Schwarz et al., 1991), I argue that analogies that can be processed more fluently lead to positive responses whereas analogies of low processing fluency are rather negatively marked. However, research also showed that metacognitive difficulty might have a positive effect on evaluation when a reasonable explanation for this difficulty was provided. I therefore argue that metacognitive difficulty is attributed to product innovativeness if the advertisement communicates that the product shown in the ad is innovative.

The following section reviews existing literature on analogical learning in order to develop an argument on how fluency theory can help to better understand the underlying mechanism. Hypotheses based on research on analogies and fluency experiences, reviewed in chapter 2.1, are derived. To test the hypotheses, an online-study conducted among 503 consumers is presented. Implications for research and practice derived from this study are discussed.

4.1 Theoretical Background

4.1.1 Analogical Reasoning

The extensive literature on knowledge transfer has identified analogies as means to better comprehend novel objects, situations or phenomena since an analogy compares the novel with the familiar and hence helps people utilizing preexisting knowledge in order to understand the unfamiliar (Gick & Holyoak, 1983). Analogies have therefore been applied in various educational contexts (cf. Zook, 1991). They support the assimilation of new information and the concretization of abstract information (Simons, 1984). For instance, when a business student learns that an organization works like a human body, she/he feels an intuitive grasp of the individual tasks members of an organization have to fulfill and of the interdependency between these different assignments. Analogies are used in everyday life consciously or unconsciously. However, not every comparison that is drawn between situations, objects or phenomena qualifies as an analogy. It can be defined as a relational comparison, an alignment of relational structure (Gentner, 1983). Knowledge is transferred between seemingly disparate knowledge structures, a base (e.g., the human body) and a target (e.g., the organization) domain, which share common relations rather than surface or attribute similarities (Gentner, 1983). To speak of a structurally sound analogy, it must be structurally consistent, that is, the match between the base and the target must show parallel connectivity and one-to-one correspondences. Parallel connectivity requires that if two causal relations are matched, then their arguments must also be matched. One-to-one correspondences include the matching of one element in one domain to at most one element in the other domain (Gentner & Markman, 1997; Gentner & Markman, 2005). Furthermore, reasoning by analogy follows the principle of systematicity, i.e., causal and logical connections rather than isolated coincidental matches are searched for (Gentner, 1983; Gentner & Markman, 1997; Gentner & Colhoun, 2010). Similar but distinctive ways of comparisons are those of literal similarity, which compares both physical attributes and relational similarities, and by mere appearance, which compares only physical attributes. Analogy and literal similarity can be considered to lie on a continuum of attribute similarity. Whereas an analogy exhibits no or little surface similarity and a high degree of relational similarity, a comparison turns into a literal similarity as surface similarity increases (Gentner & Colhoun, 2010). Figure 4-1 illustrates this distinction.



(Source: Gentner & Markman, 1997; Gentner & Colhoun, 2010)

Figure 4-1: Distinction between analogy, literal similarity, anomaly, and mere appearance

Analogies can be self-generated or provided by an external source, like teachers, textbooks or marketers. The process of analogical reasoning can be organized into five steps. First, an individual accesses the base domain (e.g., the human body): either the subject retrieves an appropriate base domain in the case of a self-generated analogy or is offered a base analog externally. In the second step, the person maps the elements of the target (e.g., the organization) to the base, i.e., she/he establishes a structural alignment by constructing one-to-one correspondences between the base and the target. This is followed by a third step, when she/he transfers knowledge from the base to the target, evaluating the analogy and its inferences. In a fourth step, the person creates a more abstract knowledge structure or a schema, which might serve as a future base. A last step may follow, when the individual attempts to improve the match by the adaptation of one or both representations (Gick & Holyoak, 1983; Holyoak, 1984; Holyoak & Koh, 1987; Gregan-Paxton & Roedder John, 1997; Gentner & Colhoun, 2010).

Since analogies help to acquire an in-depth understanding of the product and its benefits by interpreting the novel target information based on preexisting knowledge (Roehm & Sternthal, 2001; Gregan-Paxton, Hibbard, Brunel, & Azar, 2002), a recent literature stream in marketing research has suggested that analogies can be powerful means to communicate novel products.

4.1.2 Comprehending Really New Products

Various examples of the use of analogies can be found in recent marketing literature (Table 4-1 and Table 4-2). By definition, really new products cannot be classified into a product category because no such category exists yet (Gregan-Paxton & Moreau, 2003). Analogies have therefore been suggested to be superior to categorizations that try to classify a novel product in an existing product category. Although attempts exist to categorize innovations, authors have suggested that it might be ineffective to compare a really new product to existing products, because consumers might overlook the product's novelty (Gregan-Paxton & Roedder John, 1997). Results also indicate that, to a limited extent, analogies and categorizations might synergistically work together in facilitating the learning of novel products, yet they must be treated as different concepts as they facilitate learning in different ways (Gregan-Paxton & Moreau, 2003). Whereas categories rather help to organize knowledge, analogies support the use and application of knowledge (Gregan-Paxton & Roedder John, 1997). Additionally, analogies force recipients to focus on the relational similarities (Gregan-Paxton & Moreau, 2003). In contrast, comparisons by attributes only can be determined error-prone since the subset of knowledge that can be transferred from the base to the target domain is relatively small (Gregan-Paxton & Roedder John, 1997).

Although research has increasingly studied analogies as means to communicate novel products, authors indicate an existing lack of fully understanding analogies as means in marketing communications (Feiereisen et al., 2008). Previous literature has delivered ambiguous results on the effects of analogies. Analogies were partly found to be more pleasurable than processing by no analogy (Gregan-Paxton et al., 2002), to help in benefit comprehension in contrast to comparisons by literal similarities and no analogies (Ait El Houssi, Morel, & Hultink, 2005a; Ait El Houssi, Morel, & Hultink, 2005b; Ait El Houssi, Morel, & Hultink, 2009), to be more persuasive than a literal similarity comparison (Roehm & Sternthal, 2001), and to be more effective if expressed in words instead of pictures (Feiereisen et al., 2008). Authors have increasingly recognized the instability of measuring the effectiveness of analogies (Hoeffler, 2003) that may be caused by the difficulty of composing sound analogies (Ait El Houssi, 2010). This issue is also reflected by the diversity of analogies that have been investigated (cf. Table 4-1 and Table 4-2) and the attempt to categorize analogies (see last column of the tables).

Research Article	Target Analog	Base Analog	'Categorization' of Analogy
Feiereisen , Wong, & Broderick (2008)	Video Glasses (headset that enables the viewer to watch videos downloaded on a mobile on a large screen)	Cinema Projector	<i>Analogy</i>
	Intelligent Oven (oven that also works as a fridge and can be programmed remotely to start cooking)	Cook	<i>Analogy</i>
	Digipen (pen that transforms handwritten notes into electronic documents)	Secretary	<i>Analogy</i>
Ait El Houssi, Morel, & Hultink (2003)	AutoMower (autonomous lawn mower)	Sheep	<i>Analogy</i>
	Personal Activity Meter (small device that measures one's daily activities by registering one's movements)	Personal coach	<i>Analogy</i>
	PDA	Secretary	<i>Analogy</i>
Ait El Houssi, Morel, & Hultink (2004); Ait El Houssi, Morel, & Hultink (2005b)	AutoMower	Robot	<i>Between-domain analogy (2004) or analogy (2005b)</i>
	AutoMower	Lawn mower	<i>Within-domain analogy (2004) or literal similarity (2005b)</i>
	SmartPen (device that biometrically identifies its users)	Fingerprint	<i>Between-domain analogy (2004) or analogy (2005b)</i>
	SmartPen	Ball pen	<i>Within-domain analogy (2004) or literal similarity (2005b)</i>

Table 4-1: Analogies in marketing research

Research Article	Target Analog	Base Analog	'Categorization' of Analogy
Ait El Houssi, Morel, & Hultink (2005a); Ait El Houssi, Morel, & Hultink (2009)	Mobile phone (with new music function)	DJ	<i>Analogy</i>
	Reading Device (portable pen-like reading device that provides definitions, spelling and pronunciation of words)	Language teacher	<i>Analogy</i>
Hoeffler (2003)	Dry cleaning tissues	Disposable diapers	<i>Analogy</i>
	Stain remover	Kleenex traveler packs	<i>Analogy</i>
Gregan-Paxton & Moreau (2003)	Offline web reader	VCR for the web	<i>Analogy</i>
Gupta & Sen (2007)	Jacuzzi	Therapist	<i>Far analogy</i>
	Jacuzzi	Sauna	<i>Close analogy</i>
Gregan-Paxton, Hibbard, Brunel, & Azar (2002)	PDA	Secretary	<i>Analogy</i>
	PDA	Librarian	<i>Analogy</i>
Roehm & Sternthal (2001)	NutriWatch nutritional management software	Quicken financial management software	<i>Analogy</i>
	MoneyWatch financial management software	Quicken financial management software	<i>Literal similarity</i>
	PDA	Cellular phone	<i>Analogy</i>
	PDA	Computer	<i>Literal similarity</i>

Table 4-2: Analogies in marketing research (continued)

In educating consumers about novel products, marketers can choose the analogy and, as such, are able to ensure that consumers use the 'right' one. However, composing an appropriate analogy can be considered a difficult task. Based on the premise in innovation diffusion research that the relative advantage is the driving factor in innovation performance (Rogers, 2003) and the ability of analogies to effectively convey new knowledge, authors in marketing have primarily focused on the capability of analogies to communicate a novel product's benefits (Ait El Houssi, 2010). Accordingly, the appropriate analogy has been considered one that allows the consumer to map existing knowledge to the target in order to understand the key benefit(s) of the novel product. However, in constructing such analogies, marketers face several difficulties. An analogy might emphasize various benefits or benefits at the expense of others, i.e., the wrong benefits (Gregan-Paxton et al., 2002). Further, an analogy might fail to communicate the full potential of a novel product (Hoeffler,

2003) or the base can convey negative or contradictory associations (Ait El Houssi, 2010).

By focusing on analogies' ability to educate consumers about key benefits and by offering criteria for the composition of efficient analogies, past studies have made a valid and important point. However, it remains questionable whether the comprehension of key benefits is the strongest or even the only factor that drives attitudes and adoption intentions. With respect to the initial perception in an advertisement context, research has not addressed whether different factors count for the successful application of analogies. Accordingly, in the few studies which measured adoption intention or similar dependent measures, a direct relationship between benefit comprehension and purchase intention could not be supported (Ait El Houssi et al., 2005a; Ait El Houssi et al., 2005b). Consequently, it remains open as to which criteria are useful in composing sound analogies in marketing that are prerequisites in order to understand the effects of analogies on attitudes and behavior. In order to fully compass the composition of analogies, the following section discusses theoretical and empirical findings from cognitive psychology research.

4.1.3 Composition of Analogies

Retrieving an appropriate base in the case of a self-generated analogy or composing an analogy and providing it externally, as it can be found in education or marketing contexts, can be considered challenging (Holyoak & Koh, 1987). The composition of analogies has major consequences for a successful analogical mapping and as such, for the evaluation of the analogy. In the first case, a subject has to retrieve an analog from long-term memory and needs to notice the analog's relevance to the problem (Holyoak & Koh, 1987). In the latter, educators or marketers must provide a base that facilitates the mapping. However, a chosen base may inhibit the risk of being unfamiliar or misunderstood (Zook, 1991). Therefore, much research has been dedicated to the retrieval and mapping of analogs in order to find criteria for the composition of sound analogies.

Although this work focuses on the marketing context and as such, on externally provided analogies, an understanding of the retrieval of analogies is essential. In the case of self-generated analogies, potential errors primarily lie in the difficulty of accessing a base analog. In retrieving possible analogies to a given problem, authors found a surface-superiority effect, i.e., individuals preferring to rely on surface or attribute similarities. This effect was found to be primarily valid for novices but also,

to a certain extent, for experts (Gick & Holyoak, 1983; Gentner & Kurtz, 2006). On the one hand, this surface-superiority effect can help to access an appropriate analogy easier. As long as object similarities support relational similarities, they can help individuals to better access the deeper underlying structure (Gentner & Kurtz, 2006). On the other hand, this effect can lead to the choice of an inappropriate base analog that shares too little or no relational similarities with the target. Novices, i.e., individuals who are not used to the usage of analogies as means of problem-solving, are especially susceptible to being less able to focus on causally relevant features (Holyoak & Koh, 1987). Since the usefulness of an analogy does not stem from surface but rather from relational similarities, the transfer and mapping of knowledge may be inhibited (Holyoak & Koh, 1987). This finding is also relevant for externally provided analogies.

When individuals are provided an analogy by an external source, different potential errors in mapping the base and the target can arise. First, a major error can lie in the choice of a base that reflects a different concept than assumed and can result in a non-accurate conception of reality (Zook, 1991). For example, comparing the planet system to an organization might reflect their common attribute of consisting of different parts, but might conceal the fact that these parts interact in very different ways and, as such, might yield in a misconception of an organization. Likewise, as addressed by structure-mapping theory (Gentner, 1983), analogs can fail to share first-order relations, i.e., relations between the objects (for example, the relation between planets and the sun can be compared to the relation between electrons and the nucleus) or higher-order relations, i.e., systems that dominate the relations (e.g., the sun is larger than the planets and planets revolve around the sun). Failure in these relations can result in difficulties of mapping the correspondences and transferring knowledge. Second, even if the base domain provides the appropriate structure, the recipient him- or herself can fail in making use of the appropriate similarities (Zook, 1991). A third issue lies in the presence or absence of preexisting knowledge. Either a recipient possesses little or no knowledge of the base analog (Gentner & Gentner, 1983; Hardiman, Well, & Pollatsek, 1984) or too much knowledge (Spiro, Feltovich, Coulson, & Anderson, 1989). Whereas the first hinders the mapping of the analogs, the latter can lead to distraction or wrong conclusions. Fourth, choosing a base that provokes negative or unfavorable associations might also affect the transfer. These potential errors in providing an appropriate base analog can result in misinterpretations or unfavorable analogy evaluations by the recipient.

In general, providing sufficient relational similarities between analogs can be considered more crucial than surface similarities for a successful mapping process. Gentner and Markman (2005), for example, found that participants who received a relational similarity match performed better on drawing analogical inferences than individuals who were shown a graph match, i.e., a surface similarity match. Moreover, recipients in the relational-similarity-group showed higher confidence ratings about the inferences they had drawn. Research also found that surface similarities had a positive effect on the mapping process (Ross, 1987; Ross, 1989). Surface features can help in the alignment of relations but may not be relevant anymore when it comes to transferring knowledge (Zook, 1991; Gentner & Colhoun, 2010). Additionally, the process of matching surface similarities is less demanding for working memory than the process of structural alignment (Waltz, Lau, & Grewal, 2000). In sum, whereas for the acceptance of a comparison as an analogy, relational similarities are dominant, “literal similarity matches are the easiest and most natural matches to compute (because the object matches support the relational matches)” (Gentner & Kurtz, 2006, p. 27). Hence, both relational and surface similarities add up to the perception of similarity, yielding to the claim that ‘similarity is like analogy’ (Gentner & Markman, 1995; Gentner & Markman, 1997, p. 45).

Whereas both psychological and marketing research has focused on content-related effects of analogies, authors to date have rarely addressed different psychological processes that may offer reasonable explanations for the mechanisms and effects of analogical reasoning. However, there is a specific need for alternative explanations for the composition and implementation of analogies in marketing, in particular in an advertising context. For example, a print advertisement mostly does not provide sufficient space to explain an analogy in detail and does not primarily invite the recipient to elaborate on the distinct benefits a product provides due to situational factors. Imagine yourself sitting in a train, stopping at a station and seeing an advertisement billboard. You might be able to grasp the claim and maybe the picture. You might even have the chance to catch some more information, for example, from a short copy text. Then the train leaves the station and you only had a short encounter with that advertisement. What could you really remember from the ad? Probably the ad claim caught your attention and you could get a slight feel for what the product is about but you probably would not have a clue about each and every single benefit of this product. Therefore, an extensive mapping and transfer process cannot take place. Acknowledging these restrictions, Day and Gentner (2007), for example, applied a fluency measure to test the “relational fluency” of analogies. They found that, although

all participants failed to recognize the relational similarities between the base and the target, they assessed a passage as better written, better understood and more interesting when it followed an analogous paragraph. The authors concluded that “[r]elational knowledge may be acquired gradually, but that even a single exposure may lead to some degree of representational change. However, these changes may be too subtle to manifest themselves in tasks that require active knowledge application, or even the explicit recognition of common structure. More implicit measures, which explore change in the simple processing of a stimulus, may be better able to detect the incipient representational changes that are taking place” (p. 939). Fluency theory, as discussed in chapter 2.1, offers a promising basis to detect the rather unconscious effects of analogical processing. This research argues that not only do analogies make a following paragraph more fluent, as suggested by Day and Gentner (2007), but that analogies themselves can be more or less fluent. In the following section, hypotheses are developed on the relationship between analogical similarity and fluency that will be tested in chapter 4.3.

4.2 Development of Hypotheses

4.2.1 Hypotheses on the Usual Fluency-Liking Link

Based on the findings on analogical learning, it is assumed that a prerequisite to successfully use an analogy for learning (even if this usage is rather unintentionally than content-driven) is the soundness of an analogy, providing sufficient surface as well as relational similarities between a base and a target analog. Analogies themselves, i.e., the comparison between a base and a target domain, could be considered more or less fluent in an initial encountering, affecting not only the evaluation of the analogy but also attitudes toward the ad or the product and, as such, purchase intentions. As elaborated in chapter 2.1, fluency, the ease or difficulty with which a stimulus is accessed, retrieved or processed, affects judgments and preferences (Schwarz et al., 1991; Schwarz, 2004). Research found that stimuli that are processed fluently are rated familiar or typical and elicit a positive affect towards the stimuli in contrast to disfluently processed stimuli that are judged unfamiliar or untypical (Schwarz et al., 1991; Reber et al., 1998; Winkielman & Cacioppo, 2001; Winkielman et al., 2003; Schwarz, 2004). As discussed above, the context of advertising calls for implicit measures that capture the effect of analogies on human judgment and preferences. Drawing on research on the composition of analogies, a good and sound analogical match – easily accessible even for young learners – is one

that is based on relational similarities and surface similarities that “can promote highlighting of the common relational structure” (Gentner & Colhoun, 2010, p. 5) and help to better understand an analogy in the first place (Loewenstein & Gentner, 2005; Gentner & Markman, 1995). Consequently, if people perceive an analogical comparison as a good match, that is, if they perceive the base and the target analog as being similar and related, they should experience higher fluency. Hence, I hypothesize:

H₁: Subjects will judge an analogy as being more fluent when the base and the target, i.e., the product shown in the advertisement, are perceived as similar.

Following the argumentation on the usual fluency-liking link, I further hypothesize:

H_{2a}: Subjects will evaluate an analogy more favorably when the base and the target, i.e., the product shown in the advertisement, are perceived as similar (vs. dissimilar).

Authors in analogical research have further argued that an analogy may be deemed helpful if it leads to the generation of new knowledge. This is particularly true if the target stems from an unfamiliar domain (Forbus, Gentner, Everett, & Wu, 1997). In the context of innovations, understanding the novel benefits is especially desirable. However, independent from the objective comprehension of benefits, it can be assumed that the perceived usefulness of an analogy to comprehend a product’s benefits follows the usual fluency-liking link (and not the objective generation of new knowledge). Hence,

H_{2b}: Subjects will perceive an analogy as more useful to comprehend the benefits of the product when the base and the target, i.e., the product shown in the advertisement, are perceived as similar (vs. dissimilar).

Since this study seeks to investigate the theoretical link between analog similarity and fluency but also how marketing-related measures are affected by changes in similarity and fluency respectively, the arguments illustrated above are extended to further dependent measures. Research on fluency experiences has shown that stimuli that can be processed easier are evaluated rather positively. Several marketing studies based on fluency theory have demonstrated that this usual fluency-liking link is also valid for product preferences (e.g., Cho & Schwarz, 2006; Pocheptsova et al., 2010). Therefore, it can be assumed that the dependent variables attitude towards the ad and attitude towards the product follow the usual fluency-liking link when subjects are presented with similar base and target analogs. Hence,

H_{3a}: Subjects will evaluate the advertisement more favorably when the base and the target, i.e., the product shown in the advertisement, are perceived as similar (vs. dissimilar).

H_{3b}: Subjects will evaluate the product more favorably when the base and the target, i.e., the product shown in the advertisement, are perceived as similar (vs. dissimilar).

As discussed in chapter 2.1.2, the influence of fluency experiences on perceived innovativeness is particularly interesting to investigate. Cho and Schwarz (2006), for example, provided first evidence that as soon as subjects had attributed low fluency to innovativeness, they reported high product preferences. However, the authors could not find any significant effects on perceived innovativeness when participants were first asked for product preferences. These and other findings demonstrate that naïve beliefs can be made salient by judgment task order or by stronger experimental manipulations such as priming or specifically designed product descriptions (Pocheptsova et al., 2010). They also allow for the assumption that if participants are not given a reasonable explanation for metacognitive difficulty, it may not be particularly attributed to product innovativeness and rather be negatively marked. It can therefore be hypothesized that perceived product innovativeness also follows the usual fluency-liking link as long as participants are not offered an explanation for the experience of metacognitive difficulty:

H_{3c}: Subjects will perceive a product as more innovative when the base and the target, i.e., the product shown in the advertisement, are perceived as similar (vs. dissimilar).

As shown in previous studies, purchase intention is also affected by fluency experiences. Following existing literature, I hypothesize:

H_{3d}: Subjects will show increased purchase intention when the base and the target, i.e., the product shown in the advertisement, are perceived as similar (vs. dissimilar).

4.2.2 Hypotheses on the Reversed Fluency Effect

The so-called reversed fluency effect was extensively discussed in chapter 2.1.2. In sum, existing findings demonstrate that whereas fluently processed stimuli may be attributed to safety, they can also be rated as dull and boring at the same time. In contrast, disfluently processed stimuli can be attributed to risk but also to novelty or

innovativeness. In creating communication campaigns for innovations, marketers face exactly this ‘flip-side of the coin’: To what extent should they emphasize the novelty of innovations? To what extent should they try to establish familiarity in order to overcome potential fears towards novelty? Since really new products do not neatly fit into existing product categories (Moreau, Markman, & Lehmann, 2001) and create entirely new categories or markets, they are associated with new usage patterns a consumer has to learn (Gregan-Paxton et al., 2002). In educating consumers about novel products, the use of analogies is particularly reasonable since they help to make novel stimuli seem familiar (Gick & Holyoak, 1983) and consequently, adoption barriers stemming from fears towards novelty might be reduced or even fully removed.

Recent studies have shown that the interpretation of metacognitive difficulty is sensitive to external interferences that offer a useful explanation for metacognitive difficulty. Marketers often include the terms ‘new’ or ‘innovative’ in advertisements. Including a simple claim that a product is innovative may provide a useful and practical approach to influence which naïve theory individuals make use of when encountering metacognitive difficulty. Hence, I investigate whether this link provokes consumers to attribute the low fluency of a dissimilar analogy to product innovativeness. Moreover, if the analogy is perceived as fluent, the presence of an innovativeness claim should result in an opposite effect: participants may perceive ease of processing as bad. Consequently, attitudes toward the analogy should change so that liking is increased if subjects are shown a dissimilar (vs. similar) analogy in combination with an explicit innovativeness claim in the copy text. Hence, I hypothesize a reversed fluency effect for all dependent measures:

- H_{4a}: If the product is presented with an innovativeness claim in the copy text, subjects will evaluate a dissimilar (vs. similar) analogy more favorably.
- H_{4b}: If the product is presented with an innovativeness claim in the copy text, subjects will perceive a dissimilar (vs. similar) analogy as more useful to comprehend the benefits of the product.
- H_{5a}: If the product is presented with an innovativeness claim in the copy text, subjects will evaluate the advertisement more favorably when presented with a dissimilar (vs. similar) analogy.
- H_{5b}: If the product is presented with an innovativeness claim in the copy text, subjects will evaluate the product more favorably when presented with a dissimilar (vs. similar) analogy.

H_{5c}: If the product is presented with an innovativeness claim in the copy text, subjects will perceive the product as more innovative when presented with a dissimilar (vs. similar) analogy.

H_{5d}: If the product is presented with an innovativeness claim in the copy text, subjects will show increased purchase intention when presented with a dissimilar (vs. similar) analogy.

The following conceptual framework summarizes the presented hypotheses.

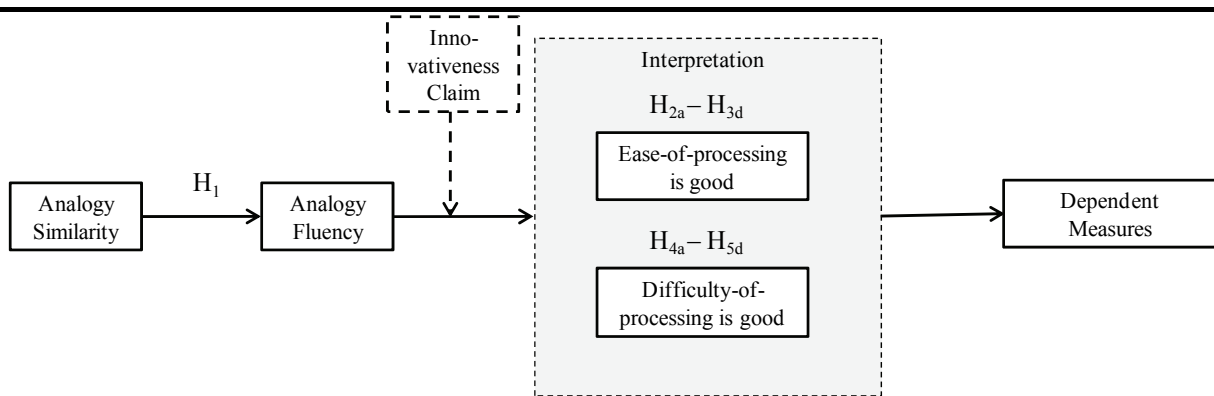


Figure 4-2: Framework of study

Of special interest in this study are perceived innovativeness and its role as a possible mediator between metacognitive difficulty and purchase intentions. Pocheptsova et al. (2010) showed that subjects attributed metacognitive difficulty to product exclusivity at all events, but that exclusivity only had a positive effect on product preferences when a prime suggested that the product could be exclusive. Hence, exclusivity worked as a mediator but its effect on purchase intention was moderated by the prime. This work also suggests that perceived innovativeness mediates the relationship between fluency experiences and purchase intention. In contrast to the study of Pocheptsova (2010), this study suggests that an externally induced naïve theory moderates the relationship between metacognitive experiences and perceived innovativeness; furthermore, perceived innovativeness should have a positive effect on purchase intention at all events. In particular, metacognitive difficulty is only attributed to perceived innovativeness when participants have a reason to believe that difficulty of processing is good, i.e., when an innovativeness claim is provided. Note that this work manipulates analogy similarity to investigate which factors account for analogical fluency. Hence, the last hypothesis can be defined as follows:

H₆: Perceived innovativeness will mediate the effect of analogy similarity on purchase intention.

4.3 Method

4.3.1 Design, Subjects, and Procedure

585 German consumers participated in an online-study. 82 recipients who were not able to complete the questionnaire were dropped from further investigation, resulting in 503 cases. 44.5 percent of subjects were female within a 19- to 40-year-old range. The majority (58.5 percent) of them held a general certificate of secondary education. 28.9 percent finished high school and 11.1 percent held a university degree. Most of the participants were company employees or public officers (59.9 percent), while 18.5 percent were still in school. 27.2 percent had a household net income per month under 1.500 Euro, 17.3 percent between 1.500 and 2.000 Euro, 21.7 percent between 2.000 and 2.500 Euro, 24.7 between 2.500 and 3.800 Euro, and 8.3 percent over 3.800 Euros. Each participant was randomly assigned to one of the advertisements. There were 57 to 76 participants in each cell of this 2 Product (Tablet-PC vs. Media Player) × 2 Analogy (similar vs. dissimilar) × 2 Innovativeness Claim (without vs. with) factorial design. Subjects were first presented with the advertisement that could be read in a self-paced manner and then asked to fill in the questionnaire. Finally, they were asked to provide demographic data.

4.3.2 Development of Stimuli

Based on a round of experts ($n = 10$), two innovative products were chosen, both from the area of consumer electronics. The first product was a tablet-/booklet-PC (referred to as Tablet-PC) that had not been introduced to the market at the time of the study. The second product was an all-in-one media player device that transfers different music or film formats from a PC, the Internet or a USB Stick to a TV (referred to as Media Player) and that had been shortly on the market at the time of the investigation. Both products could be considered really new products since they challenge consumers as well as the organization to adapt new behavior (Moreau, Markman et al., 2001; Feiereisen et al., 2008). A pretest conducted online among 60 German consumers showed that participants were unfamiliar (*How familiar are you with the product? – not familiar/highly familiar* and *Have you ever read, seen or heard anything about the product? – never/very often*; $r = .66$, $\alpha = .79$) with both products

because means were significantly lower than the midpoint of the scale ($M_{Tablet-PC} = 1.98$, $t(30) = 7.73$, $p < .001$ and $M_{Media Player} = 2.62$, $t(28) = 4.46$, $p < .001$).

For each product, two analogical bases were selected: one similar and one dissimilar. Based on the literature review, the similar analogical base included relational similarities as well as some surface-structural similarities (resulting technically speaking in a literal similarity comparison, but referred to as similar analogy; Tablet-PC: diary; Media Player: DVD-player). The dissimilar analogical base only showed relational similarities (Tablet-PC: storage room; Media Player: distribution room) which were considered to be rather difficult to retrieve and process. For each condition, one ad was created using the analogy (e.g., ‘like a diary’) as a claim. The pretest deemed the manipulation of analogy similarity successful ($M_{Tablet-PC_simAna} = 4.86$ vs. $M_{Tablet-PC_dissimAna} = 4.17$, $t(30) = 3.00$, $p < .01$; $M_{Media Player_simAna} = 4.17$ vs. $M_{Media Player_dissimAna} = 3.46$, $t(29) = 3.17$, $p < .01$). Each ad showed a picture of the product. Real brand names were removed to prevent brand influence. Instead, hypothetical brand names were chosen (Tablet-PC: ‘TM3000’; Media Player: ‘WD3000’). Based on original product descriptions, a one-sentence copy text was created containing the key novel attributes in each version. The analogy was not further explained in the copy text. Ad layout was held constant across conditions. To exclude design effects on subjects, participants were asked in the main study how professional and realistic they thought the ad design was ($r = .73$, $\alpha = .84$). A t-test revealed that the ad design was perceived as professional and realistic on an intermediate level without any significant difference between products ($M_{Tablet-PC} = 4.94$ and $M_{Media Player} = 4.80$, $t(503) = 1.20$, $p > 0.2$).



Figure 4-3: Advertisement high in fluency (without an innovativeness claim)³



Figure 4-4: Advertisement high in fluency (with an innovativeness claim)

³ All advertisements and their English translations can be found in appendix 7.2.

4.3.3 Selection of Dependent Measures

To capture the theoretical link between analogy similarity and derive sufficient practical implications, the questionnaire consisted of several theoretically driven and marketing-related dependent measures. Subjects were instructed to agree or disagree to several statements about perceived product innovativeness on a nine-item seven-point scale based on Boyd and Mason (1999) (*This product is a great idea.; This product would be fun to own.; Many people will buy this product.; This product fills a real need for me.; This product is a big improvement over existing products.; This product can give a real value to many individuals.; This product is just another gimmick. (r); Many people will believe this product is worth the cost; This product is very innovative. – do not agree at all/fully agree; $\alpha = .93$). They were also asked to rate their overall attitude towards the product on a four-item, seven-point differential scale (*bad/good; unfavorable/favorable; dislikable/likable; undesirable/desirable; $\alpha = .93$; cf. Aaker, 2000*). Participants were presented with the measurements of perceived innovativeness and attitude towards the product in a random judgment task order. Individuals were also asked to assess their interest in buying the product as soon as it may become available on the market on a seven-point semantic differential scale. Participants were then asked to rate the fluency with which they processed the analogies on a two-item seven-point differential scale (*How difficult or easy was it to follow the comparison? – very easy/very difficult; How quick could you pick up the comparison? – not at all fast/very fast; $r = .85$; $\alpha = .91$*). Analogy similarity was measured according to the pretest on a four-item, seven-point Likert-scale (*The comparison suits the product very well.; The comparison is adequate to describe the product.; The comparison is very far-fetched. (r); The comparison and the product are very similar. – do not agree at all/fully agree; $\alpha = .77$; cf. A. Y. Lee & Labroo, 2004*). In order to capture attitude towards the analogy, a four-item, seven-point semantic differential scale was used (*unpleasant/pleasant; bad/good; boring/interesting; not appealing/appealing, $\alpha = .96$*). Participants were then asked to what extent the comparison helped them to comprehend the benefits of the advertised product. The semantic differential seven-point scale consisted of four items (*not helpful/helpful; not useful/useful; confusing/illuminating; misleading/leading; $\alpha = .96$; Ait El Houssi et al., 2005b*). The overall attitude towards the ad was measured on a four-item, seven-point differential scale (*bad/good, unpleasant/pleasant, dislike/like, not appealing/appealing, $\alpha = .96$; Campbell & Keller, 2003*). A scale overview can be found in Table 4-3.*

Measure	Number of Items	Reliability	Source
<i>Dependent Variables</i>			
Perceived Innovativeness	9	$\alpha = 0.93$	cf. Boyd & Mason (1999)
Attitude Towards the Product	4	$\alpha = 0.93$	cf. Aaker (2000)
Purchase Intention	1	n .a.	n.a.
Fluency	2	$r = 0.85$	n.a.
Attitude Towards the Analogy	4	$\alpha = 0.96$	n.a.
Usefulness of Analogy	4	$\alpha = 0.96$	El Houssi, Morel, & Hultink (2005b)
Attitude Towards the Ad	4	$\alpha = 0.96$	cf. Campbell & Keller (2003)
<i>Manipulation and Confound Checks</i>			
Analogy Similarity	4	$\alpha = 0.77$	cf. Lee & Labroo (2004)
Professionalism of the Ad	2	$r = 0.73$	n.a.

Table 4-3: Overview of scales used in main study (in order of measurement)

4.3.4 Confound Check: Benefit Comprehension

As discussed above, authors emphasize the advantage of analogies lying in their ability to better convey the benefits of a novel product. It can be further argued that different analogies are emphasizing different benefits. The effect of analogies on the subjective experience ‘how useful an analogy is perceived to comprehend the benefits of a novel product’ was hypothesized to follow the usual fluency-liking link and the reversed fluency effect respectively. To exclude any effects stemming from the actual comprehension, I tested the objective comprehension of benefits. First, I had to make sure that the majority of participants understood which benefits were mentioned in the ad or conveyed by the analogies. Second, I aimed at excluding a significant difference between analogies in understanding the benefits mentioned in the ad. Third, since different base analogs could convey slightly different benefits (e.g., a storage room might communicate a larger storage capacity than a diary), I had to exclude differences in the comprehension of benefits that might stem from the analogies. Participants were given six statements about the products’ benefits and were asked to assess whether

these benefits had been advertised by checking yes or no. Whereas the first statement was a filler statement, the following five were true statements. Three of them captured attributes that were explicitly mentioned in the copy text and two of them attributes that stemmed from the particular bases: one for the similar and one for the dissimilar analogy. The benefit statements for each product can be found in Table 4-4.

Source	Tablet-PC	Media Player
<i>Filler</i>	1. The TM3000 is made of plastic.	1. The WD3000 is made of plastic.
<i>Benefit from copy text</i>	2. The TM3000 is not larger than a 13x9 cm photo.	2. The WD3000 is small and compact.
<i>Benefit from similar analogy</i>	3. The TM3000 stores and saves all your experiences and memories.	3. The WD3000 streams movies whenever I want it to.
<i>Benefit from copy text</i>	4. The TM3000 has a writing and drawing function.	4. The WD3000 is able to stream movies and show pictures from the world wide web and from my computer on my TV screen.
<i>Benefit from dissimilar analogy</i>	5. The TM3000 has a lot of storage space.	5. The WD3000 transfers data from one device to the other.
<i>Benefit from copy text</i>	6. The TM3000 allows mobile researching.	6. The WD3000 is able to stream movies and show pictures from a USB-stick on my TV screen.

Table 4-4: Confound check: benefit comprehension

4.3.5 Results

This study had four main objectives. First, it investigated the relationship between similarity perceptions of analogies and their processing fluency. Second, it examined the usual fluency-liking link by testing the influence of analogy similarity on several dependent measures, hypothesizing that similar analogies would result in higher liking due to their higher processing fluency. Third, it aimed to show that if participants were provided a naïve theory by including an innovativeness claim in the copy text, the usual fluency-link link (high processing fluency results in positive responses whereas low processing fluency in negative responses) was reversed (low processing fluency results in positive whereas high processing fluency results in negative responses). Fourth, the study was designed to investigate the role of perceived innovativeness as a mediator between analogy similarity and purchase intention. In order to fulfill these

objectives, all dependent measures were tested by several 2 Analogy (similar vs. dissimilar) \times 2 Innovativeness Claim (without vs. with) analyses of variance (ANOVAs) across and for each product, followed by planned contrasts as well as post-hoc tests to explore any effects not hypothesized before. Regressions were performed to test the hypothesized mediation. In order to provide a clearer illustration of the effects and ease the interpretation of the results, they are presented alongside the four main objectives after the documentation of the manipulation and confound check. Note that the results of the main ANOVAs are only reported in section 4.3.5.4. For the single products, single ANOVAs were conducted, but they are only reported if necessary. Furthermore, planned contrasts for the single products are reported. Relevant results of post-hoc tests are also reported. Means and standard deviations for all dependent measures for the single products are shown in Table 4-6 at the end of the result section.

4.3.5.1 Manipulation Check

In order to investigate the relationship between perceived analogy similarity and fluency, I first had to demonstrate that the analogies were different in analogy similarity, although an innovativeness claim had been added in two conditions. Hence, the manipulation of analogy similarity was tested by a 2 Analogy (similar vs. dissimilar) \times 2 Innovativeness Claim (without vs. with) analysis of variance (ANOVA). There was a significant main effect of the type of analogy on analogy similarity ($F(1,499) = 22.87, p < .001$) but neither the effect of the innovativeness claim nor the interaction were significant (all $ps > .77$). Single factorial ANOVAs confirmed the significant main effect of the type of analogy for each product ($F_{Tablet-PC}(1,239) = 12.03, p < .01$; $F_{Media Player}(1,256) = 12.16, p < .01$). The Bonferroni post-hoc test revealed that the difference between the similar and dissimilar analogy reached significance for both products across conditions: the Tablet-PC without an innovativeness claim ($M_{simAna} = 4.76$ vs. $M_{dissimAna} = 4.16, p < .01$), the Tablet-PC with an innovativeness claim ($M_{simAna} = 4.63$ vs. $M_{dissimAna} = 4.22, p < .05$), the Media Player without an innovativeness claim ($M_{simAna} = 4.4$ vs. $M_{dissimAna} = 3.99, p < .05$) and the player with an innovativeness claim ($M_{simAna} = 4.55$ vs. $M_{dissimAna} = 3.99, p < .01$), lower means indicating lower perceived analogy similarity. As expected, the manipulation could be deemed successful across conditions.

4.3.5.2 Confound Check

In order to investigate whether the majority of participants were able to assess if a benefit statement was true or false equally across conditions, several crosstabulation tables were produced. Results revealed that the majority of participants were able to understand that the first benefit statement was false and the following five statements were true across conditions. Diagrams summarizing the results for both products can be found in Figure 4-5 to Figure 4-7.

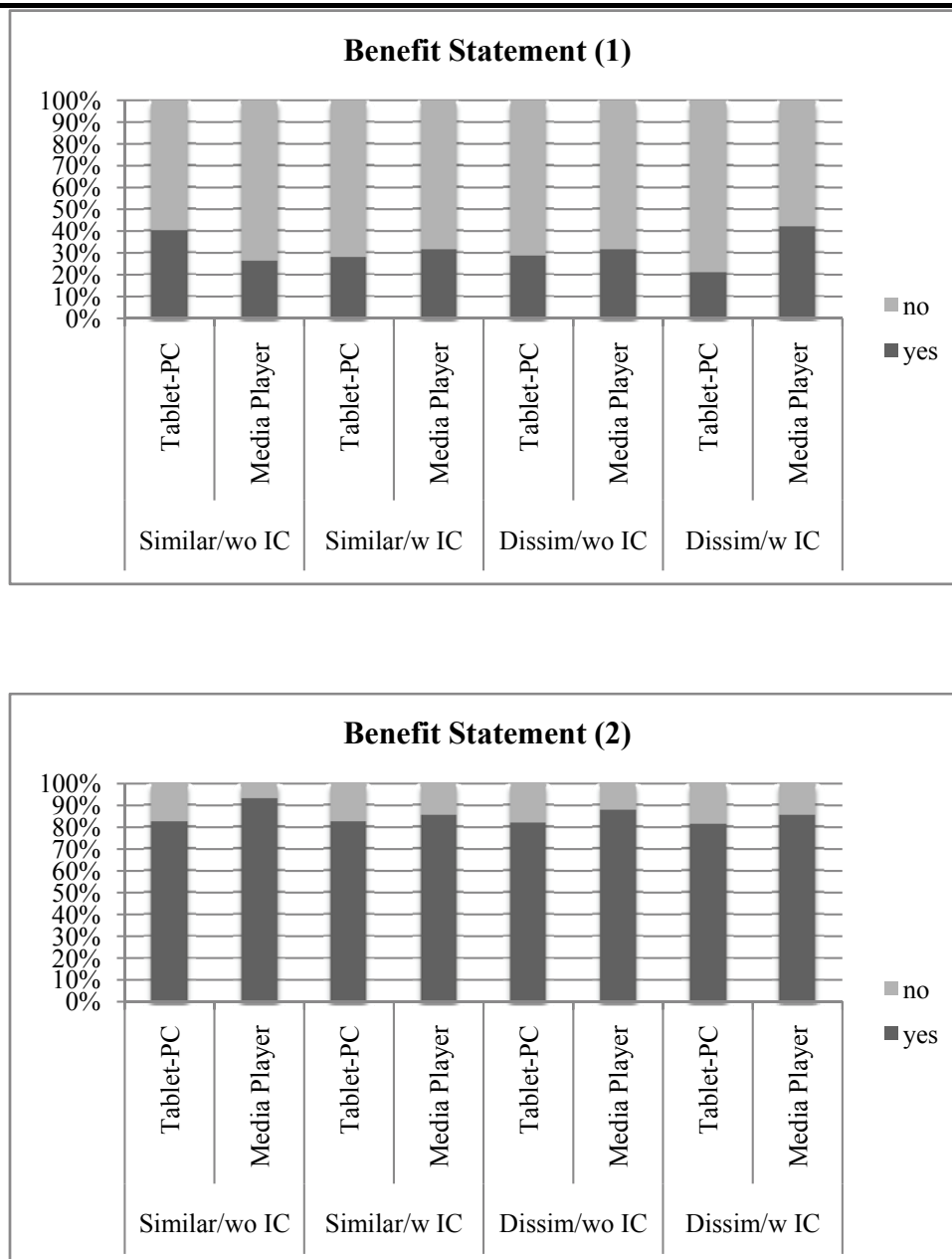


Figure 4-5: Results for benefit statements (1) and (2)

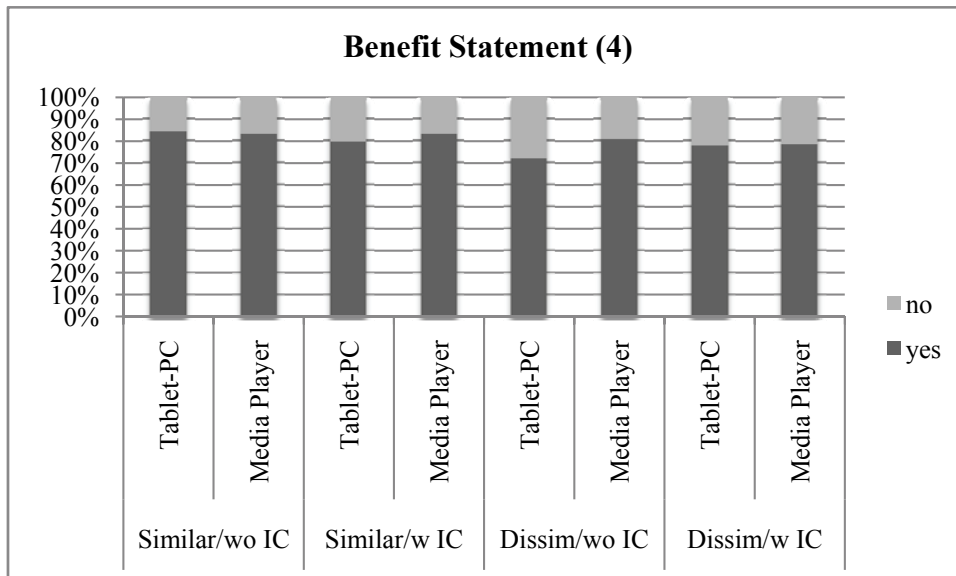
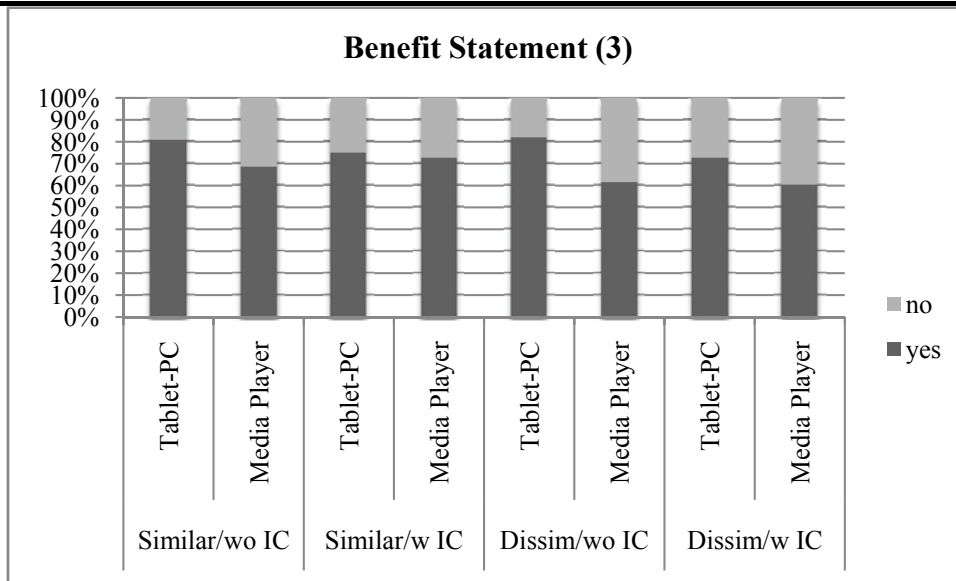


Figure 4-6: Results for benefit statements (3) and (4)

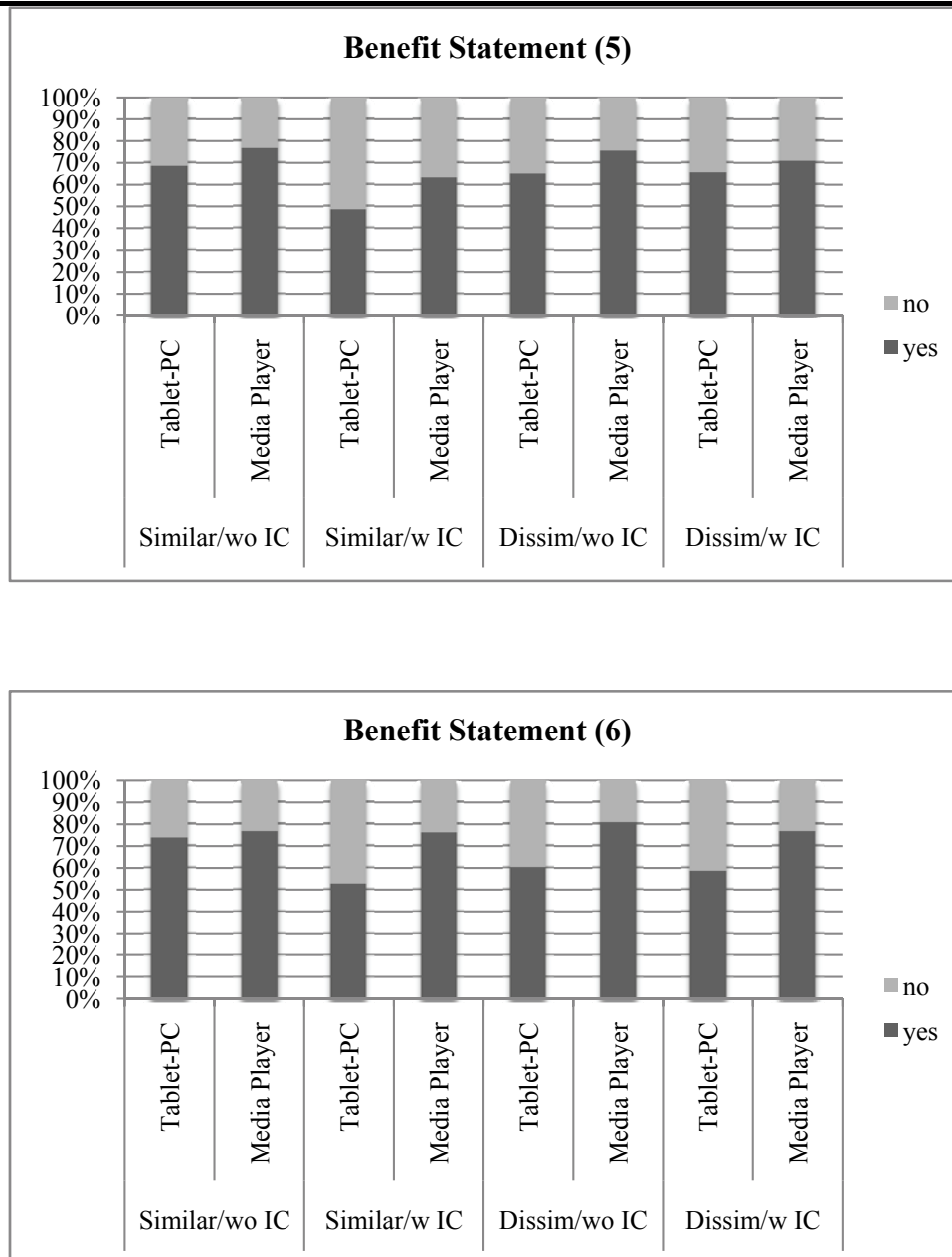


Figure 4-7: Results for benefit statement (5) and (6)

In order to test whether there was a significant difference between analogies in understanding the benefits from the ad or conveyed by the specific analogies, a series of log-linear analyses were performed on each benefit for the single products. The log-linear analysis revealed that there were no significant differences between conditions in comprehending each benefit explicitly advertised or implicitly suggested by the different analogies. In particular, a series of three-way log-linear analyses for the Tablet-PC produced final models that did not retain the three-way interaction *Analogy* × *Innovativeness Claim* × *Benefit Statement* or the two-way interactions *Analogy* × *Benefit Statement* or *Innovativeness Claim* × *Benefit Statement*. Removing the three-

way interaction ($\chi^2(1) = .06, p > .81$) or the two-way interactions ($\chi^2(3) = 6.08, p > .11$) had no significant effect on the first benefit statement, on the second ($\chi^2(1) = .00, p > .96; \chi^2(3) = .72, p > .87$), on the third ($\chi^2(1) = .10, p > .75; \chi^2(3) = 2.60, p > .46$), on the fourth ($\chi^2(1) = 1.02, p > .31; \chi^2(3) = 2.43, p > .49$), on the fifth ($\chi^2(1) = 2.54, p > .11; \chi^2(3) = 4.72, p > .19$), and on the sixth benefit statement ($\chi^2(1) = 2.54, p > .11; \chi^2(3) = 4.18, p > .24$). For all six analyses the likelihood ratio was non-significant, indicating that the final models fitted the data well (all $ps > .25$). Similar results were obtained for the Media Player. A series of three-way log-linear analyses produced final models that did not retain the three-way interaction *Analogy* \times *Innovativeness Claim* \times *Benefit Statement* or the two-way interactions *Analogy* \times *Benefit Statement* or *Innovativeness Claim* \times *Benefit Statement*. Removing the three-way interaction or the two-way interactions had no significant effect on the first ($\chi^2(1) = .13, p > .72; \chi^2(3) = 3.41, p > .33$), the second ($\chi^2(1) = .62, p > .43; \chi^2(3) = 2.26, p > .52$), the third ($\chi^2(1) = .52, p > .47; \chi^2(3) = 3.40, p > .33$), the fourth ($\chi^2(1) = .04, p > .85; \chi^2(3) = .77, p > .86$), the fifth ($\chi^2(1) = .25, p > .62; \chi^2(3) = 2.82, p > .42$), and the sixth benefit statement ($\chi^2(1) = .18, p > .67; \chi^2(3) = .44, p > .93$). The goodness-of-fit tests for all six analyses were non-significant (all $ps > .56$). The results of the log-linear analyses for both products are summarized in Table 4-5.

	Likelihood ratio of final model			Statistics			Two-Way Interactions (Analogy × Benefit Statement and Innovativeness Claim × Benefit Statement)		
	χ^2	<i>df</i>	<i>p</i>	χ^2	<i>df</i>	<i>p</i>	χ^2	<i>df</i>	<i>p</i>
Tablet-PC									
<i>Benefit Statement 1</i>	6.68	6	.35	.06	1	.81	6.08	3	.11
<i>Benefit Statement 2</i>	1.26	6	.97	.00	1	.96	.72	3	.87
<i>Benefit Statement 3</i>	3.23	6	.78	.10	1	.75	2.60	3	.46
<i>Benefit Statement 4</i>	3.99	6	.68	1.02	1	.31	2.43	3	.49
<i>Benefit Statement 5</i>	7.79	6	.25	2.54	1	.11	4.72	3	.19
<i>Benefit Statement 6</i>	7.25	6	.30	2.54	1	.11	4.18	3	.24
Media Player									
<i>Benefit Statement 1</i>	3.55	5	.62	.13	1	.72	3.41	3	.33
<i>Benefit Statement 2</i>	2.9	5	.72	.62	1	.43	2.26	3	.52
<i>Benefit Statement 3</i>	3.93	5	.56	.52	1	.47	3.40	3	.33
<i>Benefit Statement 4</i>	.82	5	.98	.04	1	.85	.77	3	.86
<i>Benefit Statement 5</i>	3.09	5	.69	.25	1	.62	2.82	3	.42
<i>Benefit Statement 6</i>	.64	5	.99	.18	1	.67	.44	3	.93

Table 4-5: Results of log-linear analyses

4.3.5.3 Analogy Similarity and Fluency

According to H₁, the more similar the base and target analogs are perceived, the higher the processing fluency of an analogy should be. Fluency was tested by a 2 (Analogy) × 2 (Innovativeness Claim) ANOVA. As predicted, there was a significant main effect of the type of analogy ($F(1,499) = 27.8, p < .001$) but no effect of innovativeness claim or a significant interaction effect. Single factorial ANOVAs confirmed the significant main effect of the type of analogy for each product ($F_{Tablet-PC}(1,239) = 12.69, p < .05$; $F_{Media Player}(1,256) = 24.23, p < .001$). To follow up significant differences between the similar and dissimilar analogy within both innovativeness claim conditions, two

planned contrasts were performed per product. Results revealed that the dissimilar analogy was perceived as more disfluent across conditions (Tablet-PC: $t_{w/o\ InnoClaim}(115) = 1.92, p < .05$ and $t_{w\ InnoClaim}(124) = 1.71, p < .05$; Media Player: $t_{w/o\ InnoClaim}(127) = 3.59, p < .001$ and $t_{w\ InnoClaim}(129) = 3.38, p < .001$, all test significances 1-tailed). H_1 proposing that a similar analogy will be perceived as more fluent than a dissimilar analogy across conditions could be supported.

4.3.5.4 Fluency-Liking Link

Attitude Towards the Analogy and Usefulness of the Analogy. Following the usual fluency-liking link, subjects should rate an analogy and its usefulness to comprehend the product's benefits more favorably if the base and the target are perceived similar and, accordingly, if the analogy can be processed fluently. Following this logic, H_{2a} and H_{2b} proposed that participants who received a similar analogy would show higher means for attitude towards the analogy and usefulness of the analogy than subjects who received a dissimilar analogy. To test these hypotheses, 2 (Analogy) \times 2 (Innovativeness Claim) ANOVAs were performed on both dependent measures. For attitude towards the analogy, results showed a significant effect of type of analogy ($F(1,499) = 17.55, p < .001$), a significant effect of innovativeness claim ($F(1,499) = 3.35, p < .1$) and a non-significant interaction term ($p = .28$). A planned contrast across products produced a significant difference between analogies ($t(244) = 3.76, p < .001$), supporting the fluency-liking link across products ($M_{simAna} = 4.90$ vs. $M_{dissimAna} = 4.17$). Results of two planned contrasts for the single products revealed a similar analogy increased liking of the analogy in the absence of an innovativeness claim ($t_{Tablet-PC}(115) = 3.14, p < .001$ and $t_{Media\ Player}(116.76) = 2.25, p < .05$), supporting H_{2a} for both products: Participants liked the analogy more when high similarity between base and target was given and, hence, it could be processed fluently. Similar results were obtained for usefulness of the analogy. Results of a two-way ANOVA showed a significant main effect of the type of analogy ($F(1, 499) = 16.99, p < .001$). A planned contrast across products revealed a significant difference between the perceived usefulness of an analogy ($t(244) = 3.29, p < .001$), resulting in a higher mean for the similar analogy ($M_{simAna} = 4.85$ vs. $M_{dissimAna} = 4.19$). Planned contrasts for the single products produced a significant difference between the similar and the dissimilar analogies ($t_{Tablet-PC}(115) = 2.27, p < .05$ and $t_{MediaPlayer}(115.05) = 2.42, p < .05$), indicating that subjects found the similar analogy to better help in comprehending the benefits of the product. H_{2b} could be supported for both products.

Attitude Towards the Ad. The effect of the type of analogy on marketing-related dependent measures (H_{3a-d}) was also suggested to follow the usual fluency-liking link. A 2 (Analogy) \times 2 (Innovativeness Claim) ANOVA was performed on attitude towards the ad. Results showed a significant direct effect of type of analogy ($F(1,499) = 8.97, p < .01$) and a significant interaction ($F(1,499) = 4.22, p < .05$). To follow up these results, a planned contrast was performed across products, supporting the hypothesized effect across products ($t(244) = 3.51, p < .001; M_{simAna} = 4.99$ vs. $M_{dissimAna} = 4.33$). Planned contrasts were further performed for each product producing a significant difference between the similar and the dissimilar analogy in the absence of an innovativeness claim ($t_{Tablet-PC}(115) = 2.94, p < .01$ and $t_{Media Player}(127) = 2.25, p < .05$). Supporting H_{3a} for both products, participants rated an advertisement more favorably if presented with a similar analogy than with a dissimilar analogy in the absence of an innovativeness claim.

Attitude Towards the Product. To test the fluency-liking link for attitude towards the product, a 2 (Analogy) \times 2 (Innovativeness Claim) ANOVA across products was performed. No significant effects were found (all $ps > .17$). To follow up any effects for the single products, ANOVAs were performed for the single products, revealing a significant interaction of type of analogy and innovativeness claim for the Tablet-PC ($F(1,239) = 8.02, p < .01$) and a significant direct effect of innovativeness claim for the Media Player ($F(1,256) = 2.87, p < .1$). Planned contrasts were performed for the Tablet-PC only. A significant difference in attitude towards the product was found between the similar and dissimilar analogy in the absence of an innovativeness claim ($t(115) = 2.25, p < .05$), supporting H_{3b} for the Tablet-PC only. In the case of the Media Player, the usual fluency-liking link, i.e., higher processing fluency leading to higher preferences, could not be supported.

Perceived Innovativeness. Cho and Schwarz (2006) found that task order influenced the perception of innovativeness, however, their results were mixed. Other authors suggested different approaches on how to externally induce the application of a naïve theory by the consumer (cf. chapter 2.1.1). This research integrates an innovativeness claim in the advertisement in order to manipulate the induction of naïve theories. However, to exclude the influence of task order on perceived innovativeness, participants were presented with the measures of product evaluation and perceived innovativeness in a random task order. A 2 (Analogy) \times 2 (Innovativeness Claim) \times (Task Order: attitude towards the product as first measure vs. perceived innovativeness as first measure) was conducted. Results revealed that task order did not influence perceived innovativeness (all $ps > .37$).

To further test the proposed hypotheses, a 2 (Analogy) \times 2 (Innovativeness Claim) ANOVA was performed on perceived innovativeness as the dependent variable. Whereas the main effects were non-significant (all $ps > .27$), a significant interaction was found ($F(1,499) = 4.38, p < .05$). To follow up the results, a planned contrast was performed across products. Results revealed a significant difference between a similar and a dissimilar analogy ($t(244) = 2.22, p < .05$), supporting the usual fluency-liking link ($M_{simAna} = 4.42$ vs. $M_{dissimAna} = 4.05$) across products. Planned contrasts were performed for the single products. In the case of the Tablet-PC, participants were shown to perceive a product as more innovative if it was presented with a similar analogy than with a dissimilar analogy when an innovativeness claim was absent ($t(115) = 2.41, p < .05$). However, no difference could be found for the Media Player ($p > .13$, 1-tailed), although pointing into the hypothesized direction. Hence, H_{3c} could be supported only for the Tablet-PC, with participants reporting higher values on perceived innovativeness when presented with a similar and therefore fluently processed analogy.

Purchase Intention. Testing the hypothesized fluency-liking link on purchase intention, a 2 (Analogy) \times 2 (Innovativeness Claim) ANOVA revealed a significant main effect of type of analogy ($F(1,499) = 3.06, p < .1$), a non-significant effect of innovativeness claim ($p > .59$) and a significant interaction of type of analogy and innovativeness claim ($F(1,499) = 5.06, p < .05$). A planned contrast across products revealed a significant difference between analogies ($t(244) = 2.69, p < .01$), resulting in a higher mean for the similar analogy ($M_{simAna} = 4.26$ vs. $M_{dissimAna} = 3.62$). To follow up the effects for the single products, planned contrasts were performed. In the case of the Tablet-PC, a significant difference in was found between analogies ($t(115) = 2.70, p < .01$). Results did not reveal any significant difference for the Media Player ($p > .13$, 1-tailed), however, pointing into the hypothesized direction. H_{3d} , suggesting that participants would rather buy the product when presented with a similar analogy could only be supported for the Tablet-PC.

4.3.5.5 Reversed Fluency Effect

It was hypothesized that if participants are explicitly offered a naïve theory by including an innovativeness claim in the copy text, the usual fluency-liking link should be reversed for all dependent measures. Participants should attribute their fluency experience to product innovativeness, resulting in higher liking values for the dissimilar analogy and lower values for the similar analogy. Note that the results for the main ANOVAs were presented in the previous section.

Attitude Towards the Analogy and Usefulness of the Analogy. H_{4a} and H_{4b} suggested that individuals who received a dissimilar analogy would show higher means in attitude towards the analogy and usefulness of the analogy than subjects who received a similar analogy when the advertisement involved an additional innovativeness claim in the copy text. Planned contrasts were performed for attitude towards the analogy across products and showed a difference between the analogies ($t(255) = 2.18, p < .05$), although not supporting the hypothesized direction ($M_{simAna} = 4.5$ vs. $M_{dissimAna} = 4.06$). To follow up on the effects for the single products, planned contrasts were performed revealing a non-significant difference for the Tablet-PC ($p > .7$) and a significant difference for the Media Player ($t(93.81) = 2.68, p < .01$), although pointing in the opposite direction ($M_{simAna} = 4.84$ vs. $M_{dissimAna} = 4.19$). To further explore the data, post-hoc tests were performed. A Bonferroni post-hoc test for the Tablet-PC showed a significant difference between the presentation of a similar analogy without or with an innovativeness claim ($M_{w/o InnoClaim} = 4.98$ vs. $M_{w InnoClaim} = 4.44, p < .05$) indicating that participants liked the similar analogy significantly less when presented with an innovativeness claim.

To test the hypotheses for usefulness of the analogy, a planned contrast was performed between the dissimilar analogy presented without and with an innovativeness claim across products. Results revealed a significant difference between these conditions ($t(255) = 2.50, p < .05$), although showing an opposite effect than hypothesized ($M_{simAna} = 4.69$ vs. $M_{dissimAna} = 4.23$). To follow up on the effects for the single products, planned contrasts were performed which produced a significant difference for the Media Player ($t(129) = 3.62, p < .001; M_{simAna} = 4.80$ vs. $M_{dissimAna} = 3.86$) but not for the Tablet-PC ($p > .90$). Post-hoc tests produced no further significant differences. Similar to attitude towards the analogy, the patterns for the single products were different. Whereas the differences in values of the similar and dissimilar analogies diminished in the case of the Tablet-PC, participants preferred the similar analogy in the case of the Media Player, although an innovativeness had been added. Although H_{4a-b} could not be supported, results for the Tablet-PC showed a change in liking for the two types of analogy when the advertisement involved an innovativeness claim in the copy text, not statistically supporting however adding up to the reversed effect of fluency. Values for the Media Player seemed to follow the usual fluency-liking link, participants preferring the similar to the dissimilar analogy.

Attitude Towards the Ad. To test if the stated hypotheses (H_{5a-d}) could hold for the marketing-related dependent measures, planned contrasts across and for the single products were performed. Results for attitude towards the ad showed no significant

difference between analogies ($p > .5$) when presented with an innovativeness claim across products whereas a planned contrast for the Media Player produced a significant difference between analogies ($t(129) = 1.87, p < .05, 1\text{-tailed}; M_{simAna} = 4.67$ vs. $M_{dissimAna} = 4.18$), not conforming the hypotheses but following the same pattern as for attitude towards the analogy and usefulness of the analogy. There was no significant difference for the Tablet-PC ($p > .30$). To further explore the data, post-hoc tests were performed, revealing a significant difference between a similar analogy presented without versus with an innovativeness claim for the Tablet-PC ($M_{w/o InnoClaim} = 5.17$ vs. $M_{w InnoClaim} = 4.41, p < .01$).

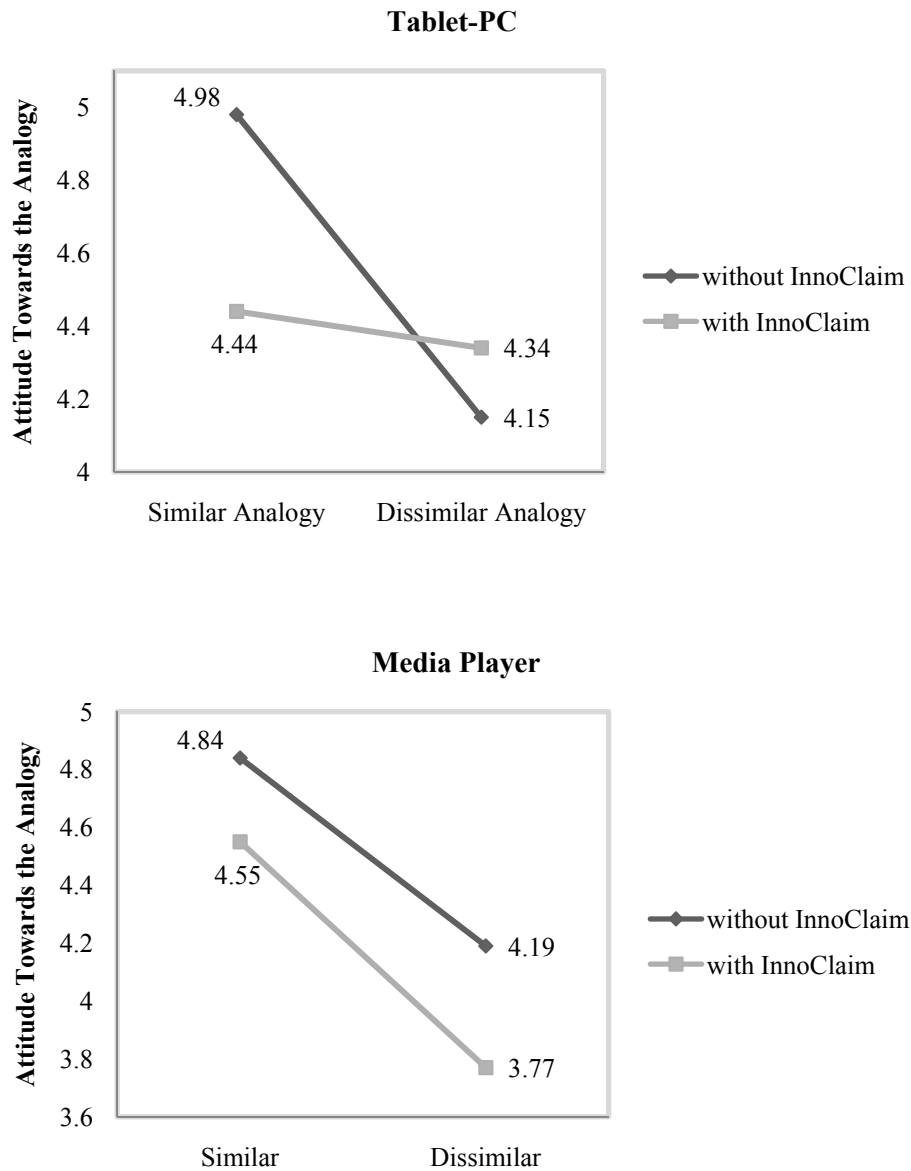


Figure 4-8: Mean ratings of analogy attitudes

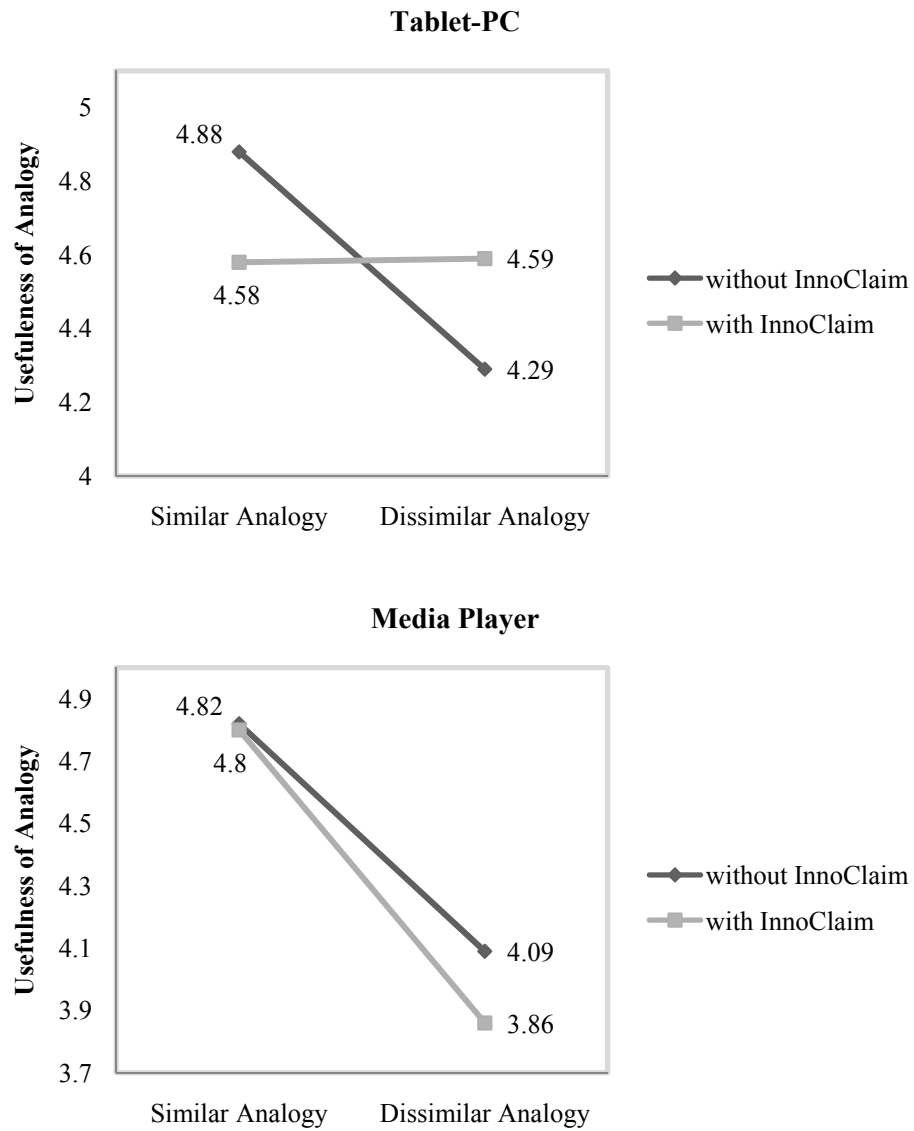


Figure 4-9: Mean ratings of usefulness of the analogy ratings

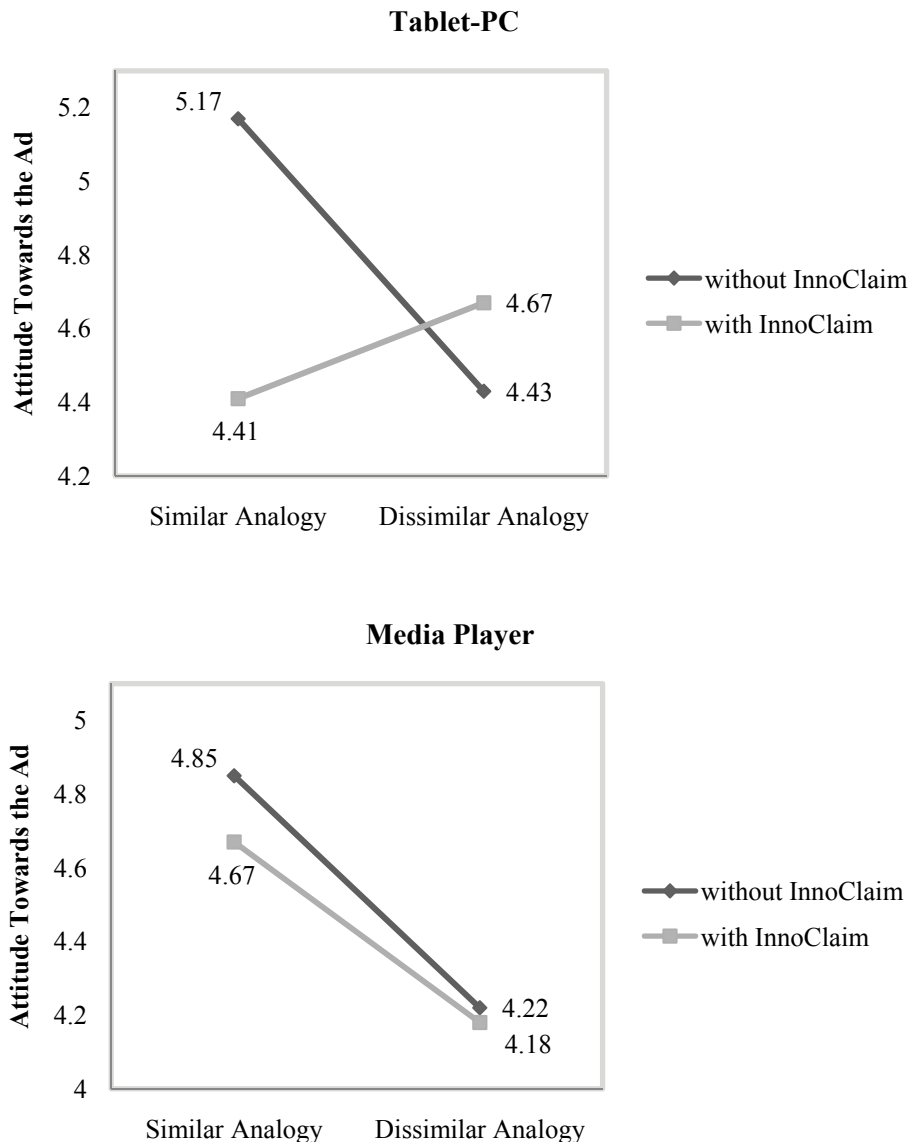


Figure 4-10: Mean ratings of attitude towards the ad

Attitude Towards the Product. Planned contrasts on attitude towards the product were performed on the single products and revealed significant differences between the similar and the dissimilar analogies when presented with an innovativeness claim for the Tablet-PC ($t(124) = 1.75, p < .05, 1$ -tailed) and for the Media-Player ($t(90.62) = 1.41, p < .1, 1$ -tailed), supporting the hypothesized reversed fluency effect for the Tablet-PC but pointing into the opposite direction for the Media Player. To investigate any effects not primarily hypothesized, a Bonferroni post-hoc test for the Tablet-PC revealed a significant difference in attitude towards the product between a dissimilar analogy when it was presented without or with an innovativeness claim ($p < .05$). A post-hoc test for the Media Player did not yield in any significant results (all $ps > .41$).

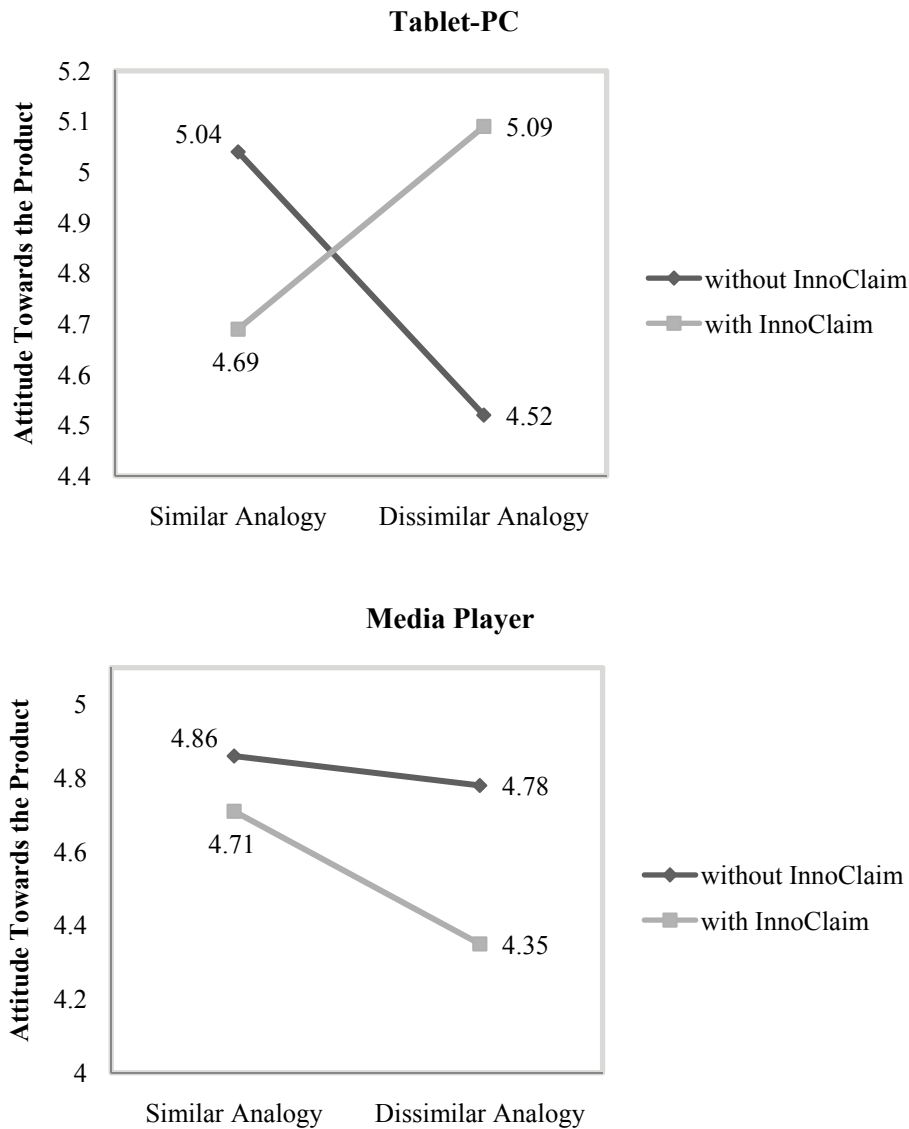


Figure 4-11: Mean ratings of attitude towards the product

Perceived Innovativeness. A planned contrast across products on perceived innovativeness revealed no significant difference between analogies. To further investigate the data for the single products, planned contrasts were performed. Results showed a significant difference in perceived innovativeness between a similar and a dissimilar analogy when presented with an innovativeness claim in the copy text for the case of the Tablet-PC ($t(124) = 1.88, p < .05$), but no significant effect was found for the Media Player ($p > .4$). Bonferroni post-hoc tests for each product further revealed that participants found the Tablet-PC significantly less innovative if the similar analogy was presented with an innovativeness claim contrary to when an

innovativeness claim was absent ($M_{w/o\ InnoClaim} = 4.47$ vs. $M_{w\ InnoClaim} = 3.90$, $p < .01$). No significant results could be found for the Media Player (all $ps > .33$).

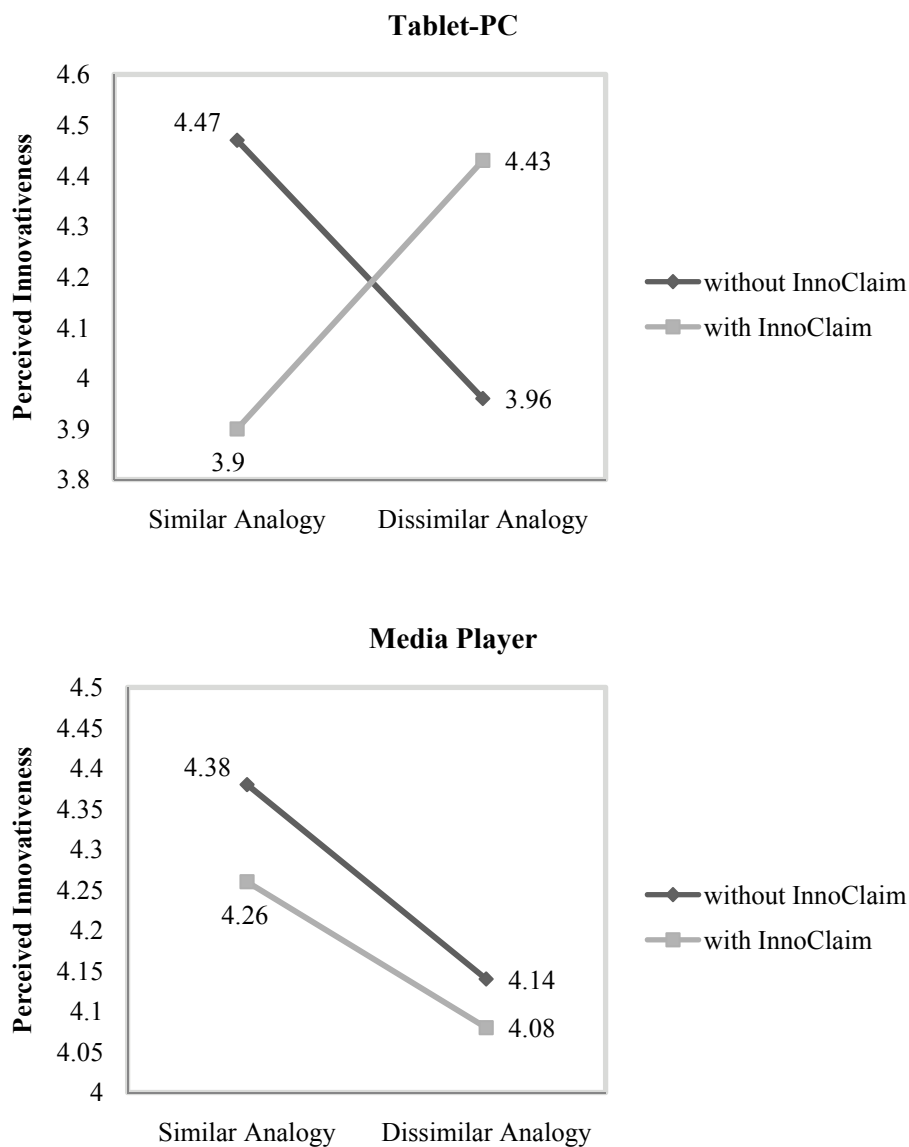


Figure 4-12: Mean ratings of perceived innovativeness

Purchase Intention. In order to investigate any differences in purchase intention, planned contrasts were performed across products that did not yield a significant result ($t(255) = .37$, $p > .7$). Planned contrasts were performed for the single products, revealing a significant difference between the similar and dissimilar analogies when presented with an innovativeness claim in the case of the Tablet-PC ($t(124) = 2.05$, $p < .05$; $M_{simAna} = 3.51$ vs. $M_{dissimAna} = 4.12$) and for the Media Player ($t(103.62) = 1.34$, $p < .1$; $M_{simAna} = 4.08$ vs. $M_{dissimAna} = 3.65$), supporting H_{5d} for the Tablet-PC but pointing into the opposite direction for the Media Player. Further effects were explored

with a Bonferroni post-hoc test revealing significant differences in purchase intention for the Tablet-PC when a similar analogy was presented without or with an innovativeness claim ($M_{w/o\ Innoclaim} = 4.23$ vs. $M_w\ Innoclaim = 3.51$, $p < .05$) and when a dissimilar analogy was presented without or with an innovativeness claim ($M_{w/o\ Innoclaim} = 3.33$ vs. $M_w\ Innoclaim = 4.12$, $p < .05$). A post-hoc test for the Media Player revealed no further significant results (all $ps > .2$).

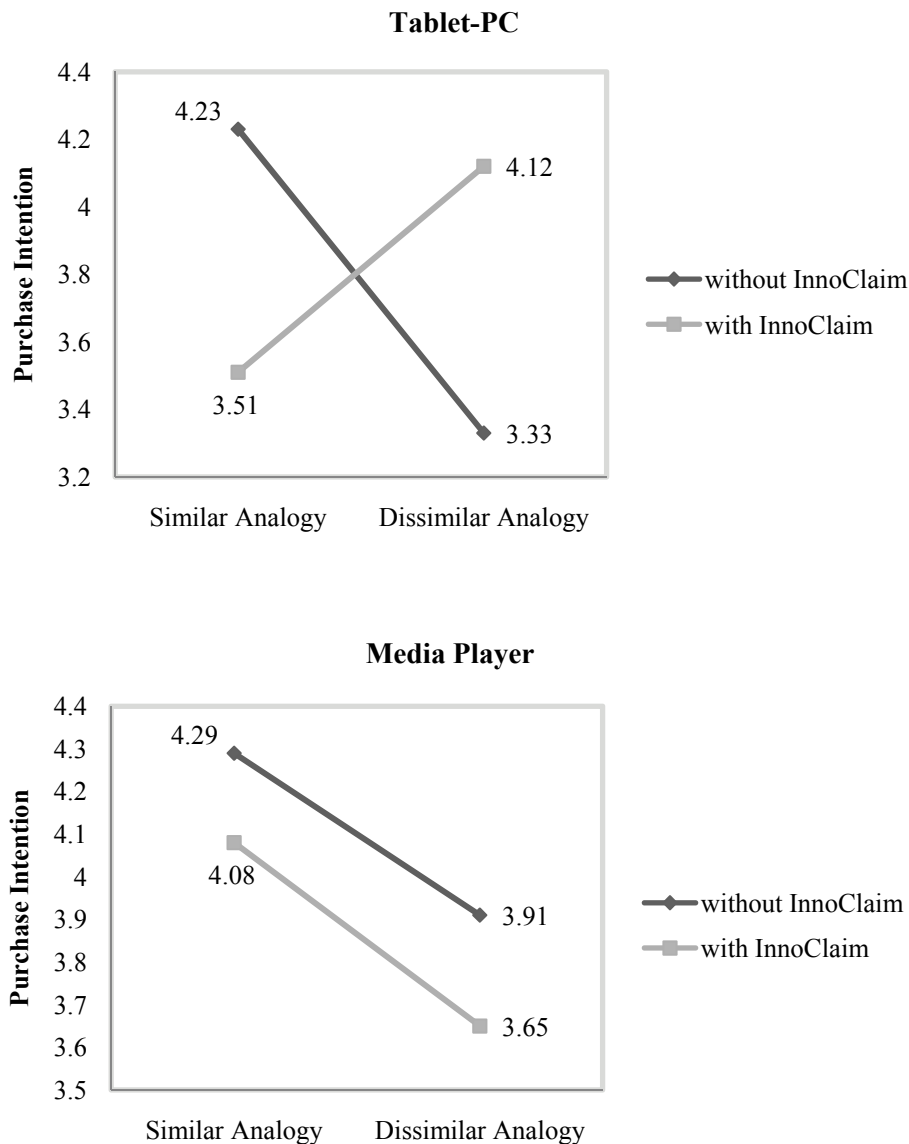


Figure 4-13: Mean ratings of purchase intentions

In sum, results largely supported the interaction between analogy similarity (and analogy fluency respectively) and the presence of an innovativeness claim as means to induce a naïve theory. In particular, participants, who received a similar analogy that could be shown to be higher in fluency ratings, reported higher values on attitude

towards the analogy, usefulness of the analogy to comprehend benefits, attitude towards the ad, perceived innovativeness, and purchase intention across products when it was not presented with an innovativeness claim. The analyses of the single products resulted in mixed findings for the marketing-related measures. Whereas for the Tablet-PC the fluency-liking link could be supported for attitude towards the ad, attitude towards the product, perceived innovativeness and purchase intention, significant results were only obtained for attitude towards the ad in the case of the Media Player. Regarding the reversed fluency effect, the results were mixed for the single products as well. Whereas the reversed fluency effect could be largely supported for the Tablet-PC, contradictory results were found for the Media Player. Results supported a reversed fluency effect on attitude towards the product, perceived innovativeness and purchase intention in the case of the Tablet-PC. Interestingly, the hypothesized reversed effect did not hold for the Media Player. Although an innovativeness claim was added, participants still seemed to follow the usual fluency-liking link. Potential sources for these mixed results will be discussed in section 4.4. Overall, the results obtained across products provide a strong evidence for the fluency of analogies and its effects on liking.

Tablet-PC				
	Similar Analogy		Dissimilar Analogy	
	Without Innovativeness Claim	With Innovativeness Claim	Without Innovativeness Claim	With Innovativeness Claim
Perceived Innovativeness	4.47 (1.19)	3.90 (1.24)	3.96 (1.10)	4.43 (1.26)
Attitude Towards the Product	5.04 (1.32)	4.69 (1.25)	4.52 (1.19)	5.09 (1.24)
Purchase Intention	4.23 (1.73)	3.51 (1.63)	3.33 (1.84)	4.12 (1.68)
Fluency	2.52 (1.32)	2.50 (1.29)	3.00 (1.49)	2.89 (1.45)
Attitude Towards the Analogy	4.98 (1.39)	4.44 (1.46)	4.15 (1.47)	4.34 (1.58)
Usefulness of the Analogy	4.88 (1.27)	4.58 (1.36)	4.29 (1.55)	4.59 (1.50)
Attitude Towards the Ad	5.17 (1.35)	4.41 (1.31)	4.43 (1.38)	4.67 (1.46)
Manipulation Check Analogy Similarity	4.76 (1.04)	4.63 (1.14)	4.16 (1.12)	4.22 (1.23)
Media Player				
	Similar Analogy		Dissimilar Analogy	
	Without Innovativeness Claim	With Innovativeness Claim	Without Innovativeness Claim	With Innovativeness Claim
Perceived Innovativeness	4.38 (1.36)	4.26 (1.24)	4.14 (1.50)	4.08 (1.35)
Attitude Towards the Product	4.86 (1.46)	4.71 (1.11)	4.78 (1.31)	4.35 (1.59)
Purchase Intention	4.29 (1.86)	4.08 (1.65)	3.91 (2.08)	3.65 (1.79)
Fluency	2.35 (1.40)	2.72 (1.29)	3.38 (1.54)	3.59 (1.78)
Attitude Towards the Analogy	4.84 (1.57)	4.55 (1.33)	4.19 (1.67)	3.77 (1.62)
Usefulness of the Analogy	4.82 (1.61)	4.80 (1.27)	4.09 (1.75)	3.86 (1.68)
Attitude Towards the Ad	4.85 (1.63)	4.67 (1.32)	4.22 (1.50)	4.18 (1.72)
Manipulation Check Analogy Similarity	4.40 (1.13)	4.55 (0.99)	3.99 (1.23)	3.99 (1.07)

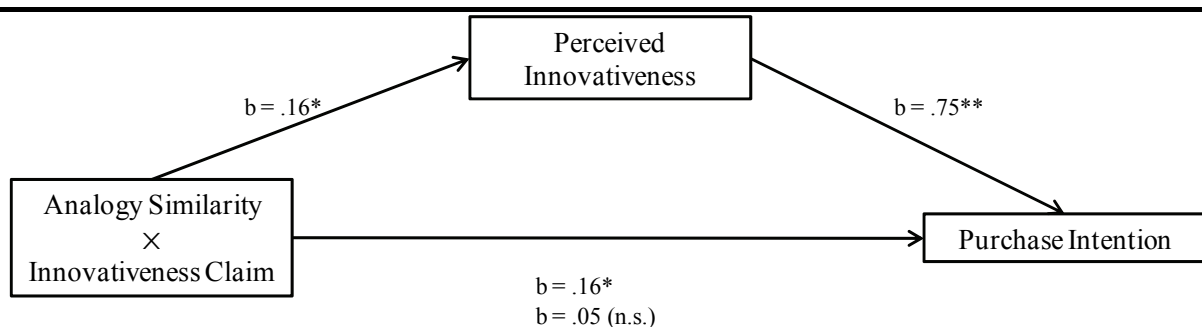
Note. Numbers in parentheses are standard deviations. Higher means indicate higher analogy similarity, attitude towards the analogy, usefulness of the analogy, attitude towards the ad, attitude towards the product, perceived innovativeness and purchase intention. Lower means indicate higher fluency. Theoretical scales ranges for all measures were 1 to 7.

Table 4-6: Means and standard deviations (in order of hypothesis testing)

4.3.5.6 Mediated Moderation

Mediation describes the relationship between an independent variable towards a mediator that affects an outcome variable. Mediated moderation occurs when the effect of the initial variable on the mediator is moderated and elucidated on the outcome variable by the mediator (Baron & Kenny, 1986; Judd & Kenny, 1981; Muller, Judd, & Yzerbyt, 2005; Morgan-Lopez & MacKinnon, 2006). It was suggested that analogy similarity and fluency experiences respectively affected perceived innovativeness and that this relationship was moderated by the integration of an innovativeness claim, that is, whether participants were provided a reasonable explanation for their metacognitive difficulties in processing the analogy. Perceived innovativeness, in turn, was proposed to affect purchase intention, i.e., higher perceived innovativeness increased purchase intention. According to the procedure outlined by Baron and Kenny (1986), a mediated moderation analysis was performed across products. Again, note that analogy similarity was manipulated. First, a regression tested whether the interaction of analogy similarity and the presence of an innovativeness claim affected the outcome, purchase intention. As expected, results were significant ($b = .17$, $SE = .32$, $t(499) = 2.25$, $p < .05$). Second, a regression was performed on the relationship between the interaction and perceived innovativeness. Results revealed a significant effect ($b = .16$, $SE = .30$, $t(499) = 2.09$, $p < .05$). A third regression tested whether the path from the interaction to the outcome variable, purchase intention, would become non-significant when the proposed mediator, perceived innovativeness, was included. It could be shown that perceived innovativeness had a positive effect on purchase intention ($b = .75$, $SE = .04$, $t(499) = 25.76$, $p < .001$; Sobel $z = 2.09$, $SE = .25$, $p < .05$) whereas the relationship between the interaction and purchase intention was non-significant ($p < .31$). The ANOVA analyses revealed mixed results for the single products. Therefore, regressions were performed that served the analysis of the mediations for the single products. The effect of analogy similarity \times innovativeness claim on purchase intention was significant for the Tablet-PC ($b = .37$, $SE = .44$, $t(239) = 3.39$, $p < .01$) but, as expected, not for the Media Player ($p > .92$). Accordingly, the interaction affected perceived innovativeness of the Tablet-PC ($b = .37$, $SE = .31$, $t(239) = 3.01$, $p < .01$) but not of the Media Player ($p > .87$). In a third step, the interaction analogy similarity \times innovativeness claim and perceived innovativeness were regressed on purchase intention. As expected, in the case of the Tablet-PC the effect of perceived innovativeness on purchase intention was highly significant ($b = .75$, $SE = .06$, $t(238) = 17.75$, $p < .001$; Sobel $z = 2.97$, $SE = .34$, $p < .01$). The effect of the interaction remained significant only at a 10%-level (b

= .12, SE = .30, $t(238) = 1.67$, $p = .09$). Perceived innovativeness also affected purchase intention in the case of the Media Player ($b = .75$, SE = .06, $t(255) = 18.32$, $p < .001$). To follow up the significant interaction, further regressions were performed for the Tablet-PC. As expected, metacognitive difficulty had a negative effect on purchase intention when the ad was presented without an innovativeness claim ($b = -.24$, SE = .33, $t(115) = 2.70$, $p < .01$) but a positive effect in the presence of an innovativeness claim ($b = .18$, SE = .30, $t(124) = 2.05$, $p < .05$). Accordingly, the Tablet-PC was perceived as more innovative when metacognitive difficulty was combined with an innovativeness claim ($b = .22$, SE = .17, $t(124) = 1.88$, $p < .1$), but less in the absence of an innovativeness claim ($b = -.22$, SE = .21, $t(115) = 2.41$, $p < .05$). Summarized, a mediated moderation could be found across products. In the case of the Tablet-PC, it could be argued that only a partial mediation could be shown, since the effect of analogy similarity \times innovativeness claim remained slightly significant. However, in regard to the small standardized coefficient, particularly in comparison to the effect of perceived innovativeness, in regard to the small significance value and in regard to the strength of the Sobel test, a full mediation can be assumed for the Tablet-PC. As expected, the interaction was not significant in the case of the Media Player. As already shown in chapter 4.3.5.5, metacognitive difficulty had a negative effect on liking of the Media Player, also when an innovativeness claim was added.



Note. $^{*}/^{**}$ p significant at $p < .05/.001$ level.

Figure 4-14: Mediation model

These results underline that metacognitive difficulty only increases perceived innovativeness and purchase intention when an innovativeness claim is added that gives the signal that 'metacognitive difficulty is good'. In reverse, the results further demonstrate that when an innovativeness claim is included in the advertisement without given metacognitive difficulty, liking decreases. Furthermore, although the

mediation could not be supported for the Media Player, the strong impact of perceived innovativeness could be demonstrated for both products.

4.3.6 Summary of Results

First of all, results confirmed the effect of analogy similarity on processing fluency. Participants rated a similar analogy to be more fluent than a dissimilar analogy across conditions for both products. Second, the usual fluency-liking link could also be confirmed across conditions and products. Subjects rated a similar analogy more favorably and more useful to comprehend benefits than a dissimilar analogy. Results further confirmed the fluency-liking link for marketing-related measures largely for the Tablet-PC. In the case of the Media Player, significant results could be only obtained for attitude towards the ad. However, results on the other dependent measures pointed into the hypothesized direction. Third, the reversed effect of fluency could only be partly supported. Results revealed a reversed effect for most of the dependent measures for the Tablet-PC. Furthermore, post-hoc tests found significant differences for some dependent measures when a similar analogy was presented with an innovativeness claim. These results further supported the hypothesized reversed fluency effect to the limited extent that subjects did not attribute metacognitive difficulty to perceived innovativeness at all events. For the Media Player, the analysis showed patterns of responses similar to the conditions when no innovativeness claim was involved, with participants responding more favorably to the similar analogy. However, note that the interaction term in the ANOVAs when performed across products became largely significant. In addition, the moderated mediation analysis produced significant results across products. Possible causes of these mixed effects will be discussed in the following paragraph. Fourth, a mediating role of perceived innovativeness between metacognitive difficulty and purchase intention could be demonstrated.

4.4 Discussion

4.4.1 Theoretical Contributions

First, this study offers an initial approach how to link analogy similarity and processing fluency. To the knowledge of the author, no such study has been conducted yet. Therefore, this research contributes to existing literature on analogical learning as well as fluency theory. On the one hand, by applying a fluency measure to analogies,

this research investigates a different manipulation of fluency experiences contributing to recent attempts to unite findings on metacognitive experiences (Alter & Oppenheimer, 2009). Furthermore, it confirms the notion that ‘similarity is like analogy’ (Gentner & Markman, 1995; Gentner & Markman, 1997, p. 45) and provides a reasonable theoretical ground to measure it. On the other hand, by focusing on fluency experiences rather than on descriptive content, further criteria for the composition of analogies are provided. For example, it was found that a similar and fluent analogy was perceived as more useful to understand the benefits although the confound check illustrated that objective benefit comprehension was equal across conditions. Using a fluency measure consequently allows capturing the effectiveness of analogies beyond the descriptive content.

Second, findings of this work contribute to recent research on the reversed fluency effect (e.g., Galak & Nelson, 2010). It could be shown that metacognitive difficulty was positively marked as soon as participants were offered an innovativeness claim. The results demonstrated that the attribution only took place when participants were offered a signal to interpret metacognitive difficulty as good (Brinol et al., 2006) in contrast to the study of Pocheptsova (2010). Furthermore, although results could confirm the usual fluency-liking link when no innovativeness claim was added, they also demonstrated that ease-of-processing could be interpreted as bad when this claim was introduced. As such, it further confirms the notion that easy-to-process stimuli are not always followed by positive judgments.

Third, the study contributes to research on innovation diffusion. By examining individual underlying processes in the perception of innovations, this work provides insights into the role of perceived innovativeness. As soon as participants attributed their fluency experiences to perceived innovativeness, purchase intention increased dramatically. The results allow for two important conclusions that contribute to research on innovation commercialization: (a) The mediation analysis demonstrated the important role of perceived innovativeness in affecting purchase intentions positively. (b) Applying a fluency measure showed that it is not necessarily the declarative content or the actual benefits that add up to perceived innovativeness. Specifically in an innovation context, it appears to be reasonable to apply unconscious measures to further investigate new product evaluation.

4.4.2 Managerial Implications

Investigating consumers' responses to innovations and particularly perceived innovativeness, based on fluency theory, offers a useful explanation for the composition and application of analogies in advertisements. The perception and evaluation of advertisements is determined by specific conditions, such as the format of an ad. For example, a print-ad is mostly picture-dominated and space is often missing for additional text, which may further explain the product or the analogy. Furthermore, advertisements are primarily placed within other content, such as in magazines, where editorial content and other ads may distract from the ad in question. The mapping and transfer process in analogical learning may be shortened or not even take place when people are not highly involved with the ad. This may particularly affect the effectiveness of analogies. Marketers regularly use analogies to promote novel products from various domains in different media channels. For example, the antacid AntraPro by the pharmaceutical company Bayer has been lately introduced to the market as a remedy that helps to reduce the production of stomach acid. The product is compared to a saucepan that boils over. By reducing the temperature, it can be stopped from boiling over. AntraPro similarly helps to reduce the stomach acid when it 'boils over'.



© Bayer

Figure 4-15: TV-commercial for AntraPro, an antacid compared to an overboiling saucepan

The electrical tooth-brush provider Oral-B lately introduced an incrementally new toothbrush to the market, which electronically guides consumers how to brush their teeth. In a TV-commercial, Kai Pflaume, a well-known German TV-presenter, compares this guiding system ('SmartGuide') with a car navigation system that guides the consumer 'where to go in his/her mouth'. Another example is the print ad of a self-cleaning screen of the company EIZO that compares the screen with a fictitious self-cleaning car.



© Oral-B

Figure 4-16: The electrical tooth-brush Oral-B with 'SmartGuide'



© EIZO

Figure 4-17: Print-ad for a self-cleaning screen compared to a self-cleaning car

Although this study focused on consumer electronics, it also provides some useful implications for managers how to effectively use analogies in marketing communications in different domains: first, it demonstrates that fluent analogies, that is, analogies that offer the recipient some superficial as well as sufficient relational similarities, are efficient means in order to communicate novel products. By applying

fluency theory, managers are provided with a measure that easily captures unconscious effects of analogies on new product evaluation.

Second, results provide evidence that the integration of an innovativeness claim can have positive as well as negative effects and should therefore be effectively considered in practice. In the case of the Tablet-PC, it could be clearly demonstrated that as soon as subjects were offered a reasonable explanation for their metacognitive difficulty, namely an innovativeness claim, they liked the product significantly more. However – and this is particularly important, since the terms ‘innovation’ or ‘innovative’ are regularly used in advertisements – when the analogy was easy to process, the innovativeness claim had a negative effect on product liking. These results support the counterintuitive notion that in an innovation context, communicating novel products as simply as possible may not be the optimal advice at all means. Furthermore, it provides managers with the notion that explicitly stating that a product is innovative is dependent on the content of the ad. Combining the explicit statement with content that promotes metacognitive difficulty apparently provides advantages over combining it with content that promotes metacognitive ease.

Third, the study demonstrates that it may be not only the declarative content of an ad that determines consumers’ purchase intentions. Although consumers may objectively comprehend the benefits stated in an ad, supported by an analogy, fluency experiences from the analogy may affect their subjective comprehension. In the examples shown above, marketers chose very simple base analogs; consumers are certainly easily able to imagine a navigation system, a saucepan and even a self-cleaning car. The level of analog similarity in the given examples, however, is different. In the case of Oral-B, the two analogs share strong surface similarities; the look and design of the guide resembles a navigation system. The base analog saucepan and the target analog antacid show less evident surface similarities; the TV-commercial, however, creates a strong visual link between the analogs. In the case of EIZO, a car shares no surface similarities with a screen. Furthermore, the analogy is based on a fictitious image. Consumers may have more troubles to process this analogy in an initial encounter than the first two examples, which may produce a subjective feeling of non-understanding. However, given that the interpretation of analogical fluency appears to be affected by other elements of the ad (such as an innovativeness claim), the effectiveness of the car-screen-analogy may be supported by the copy text; it claims that a self-cleaning car is unimaginable and thereby implicitly suggests the screen to be innovative. The analogy lies therefore in the inconceivability of this situation; customers probably need to lay great effort into disentangling this analogy. Without drawing a conclusion on the

effectiveness of these examples, they illustrate how important the consideration of fluency experiences in designing advertisement claims based on analogies is.

4.4.3 Limitations

Although this study offers important implications for research and practice, several limitations have to be addressed. First, the choice of the base analogs is accompanied by some issues. The results do not allow for a final analysis of the components of analogy fluency. Although base analogs were chosen that should be familiar to the average population, the fluency experiences of participants might also have been caused by differences in base knowledge (Hoeffler, 2003; Feiereisen et al., 2008). For example, people might have had fewer problems to imagine a diary than a storage room. Furthermore, “[...] it is unreasonable to expect a single source analog to contain all the relations and operations required for complete understanding of a complex target domain” (Zook, 1991, p. 60).

Second, the confound check for benefit comprehension was conducted to exclude major differences in benefit comprehension between analogies. However, this check might be somewhat incomplete. Due to experimental circumstances, the recipients evaluated only six statements. Although the choice of these statements was carefully considered, there is a potential danger of having not included several more statements that might have been evaluated differently. How to interpret the confound check should therefore be considered carefully.

Third, results on the reversed fluency effect were somewhat mixed. In the case of the Tablet-PC, only the product-related measures (attitude towards the product, perceived innovativeness, and purchase intention) were strongly affected whereas the differences in values for the non-product-related measures were diminished rather than reversed. Furthermore, a reversed fluency effect could not be confirmed for the Media Player. One potential problem lies in the visual complexity of the product. Whereas the picture of the Tablet-PC underlines its different functions and features, the Media Player might be considered visually boring and therefore may undermine the metacognitive difficulty stemming from the analogy. Rindova and Petkova (2007), for example, pointed out that the design could have a strong effect on the perception of novelty. Another potential source lies in the base analog ‘like a DVD-player’. Although this choice was made carefully, one could argue that it is rather a categorization than an analogy since it stems from the same product category (Gregan-Paxton & Moreau,

2003). The base analog for the Tablet-PC was somewhat more abstract. Although this study is limited to some extent, it suggests useful avenues for future research.

4.4.4 Future Research

First, to the best knowledge of the author, this is the first study that provides a promising connection between the application of analogies and fluency experiences in processing these analogies and thereby, provides further space for testing the relationship between analogy similarity and fluency. Furthermore, using fluency theory as a theoretical basis does not mean disregarding other mechanisms of analogical reasoning causing metacognitive ease or difficulty. Basic theoretical work on analogical reasoning offers several factors that might also influence the unconscious evaluation of an analogy; for example, consumers' knowledge about the base analog might be different and therefore, someone who knows more about the base may process an analogy more easily. Furthermore, different analogies may emphasize different benefits and draw a consumer's attention to different features of the product. Additionally, comparisons can undermine the novelty of a product (cf. Ziamou & Ratneshwar, 2002). Imagine the following analogy between pesticides in produce and antibiotics in meat (Shapiro, Spence, & Gregan-Paxton, 2009): by comparing different examples of food that deserve an organic symbol, you might understand that leaving out antibiotics in meat is similar to leaving out pesticides in produce. However, consider the following fictitious case: by concluding it is similar or even the same, you might also assume that the idea of leaving out a chemical ingredient is not particularly novel. A possible consequence could be that you think nothing of it. The responsible marketers maybe having tried to improve the meat industry's image or promote higher prices would then have missed their target since they were not able to catch and keep your attention. Investigating effects, that stem from fluency experiences as well as from the 'content' of an analogy, appears therefore to be a comprehensive approach.

Second, in this respect, the investigation of the role of cognitive resources promises a rich area (cf. section 5.5.2.2). Research has found, for example, that people who are highly involved in a topic rather assess the declarative content and do not rely on fluency experiences (Schwarz, 1998; Rothman & Schwarz, 1998; Haddock et al., 1999; Cho & Schwarz, 2006). Investigating the notion of "accessible content vs. accessibility experiences" (Schwarz, 1998) in analogical learning seems particularly fruitful since researchers have, so far, focused on the declarative content that could be conveyed by analogies. Therefore, future research should integrate measurements of

involvement, personal relevance or need for cognition (Petty, Cacioppo, & Schumann, 1983; Wood & Swait, 2002).

Third, the study presented has not investigated effects of analogies when a subsequent text explains the analogy, so that recipients are supported in comprehending the relations between the base and the target analog (Gentner & Kurtz, 2006). This experiment provided participants only with one sentence that explained the main feature of the product but not how it related to the base analog. Fluency experiences stemming from analogies may alter with subsequent explanations. Investigation of this effect may provide researchers and managers with further criteria in composing and using analogies in marketing.

Fourth, from a theoretical as well as practical standpoint the investigation of dynamic aspects of analogical fluency seems worthwhile (cf. section 5.5.4). Research has found that with increased exposure the fluency of originally unfamiliar objects and liking increased (Zajonc, 1968). However, it was also found that initial unfamiliarity might be a useful approach to successfully market novel products in the long-term (Landwehr, Herrmann, & Heitmann, 2009). Since in an initial encounter disfluent stimuli may seem risky, over a phase of repeated exposure they may appear more interesting than initially familiar stimuli. Transferred to the learning by analogies, it appears to be particularly interesting if criteria for the composition of analogies should alter during a product life cycle. For example, it seems worthwhile investigating if fluent analogies are helpful during the preannouncement time to overcome consumers' fears and if rather disfluent analogies make sense during a later stage of market introduction. In this respect, it would also be interesting to investigate effects on copy texts that may follow an analogy in an advertisement. Analogies were found to make subsequent texts more fluent even during an initial exposure (Day & Gentner, 2007). During an initial phase, relations cannot be fully mapped, "but [that] relational knowledge may be acquired gradually" (p. 939). Investigating how fluency experiences stemming from analogies themselves and fluency experiences stemming from subsequent content evolve over time into consciously mapped relations, understanding the deeper underlying structure, could shed light on dynamic aspects of analogies.

5 General Discussion

Research in innovation diffusion has focused on the product itself and has found criteria how the product should be designed by its benefits, functions, and features. It seems that only during the past several years authors have acknowledged the importance of researching the underlying processes of the perception of innovations in marketing communications. Whereas findings from strategic research exist on differences in communication strategies (e.g., Y. Lee & Colarelli O'Connor, 2003; Homburg, Bornemann, & Totzek, 2009), the individual underlying processes in perceiving and judging innovations in marketing communications remain under-researched. With the rise of analogical learning research in the context of innovation diffusion, research should acknowledge the importance of understanding consumers' attitudes and behavior towards the communication of innovations.

5.1 Summary of Results

Chapter 1.2 introduced four research goals. This section will briefly summarize the results from both empirical parts in order to determine whether the research goals were achieved in the course of this dissertation. The first research goal was formulated as follows:

RG1: The investigation of the relevance of fluency experiences and, in particular, the so-called reversed fluency effect, for the perception of innovations and perceived product innovativeness.

In sum, results from both empirical parts could confirm that metacognitive experiences play a role when consumers judge innovations in advertisements. In particular, it could be demonstrated that fluency experiences affected how innovative consumers perceived a product to be. Applying different fluency manipulations, the effect of fluency experiences could be confirmed across manipulations apart from the font manipulation in the first empirical part (study 3). A reversed fluency effect could be only shown to occur under specific conditions. In particular, individual chronic naïve beliefs or the introduction of a naïve belief through an external source moderated the interpretation of fluency experiences and consumers' responses towards the presented innovations. The second research goal was defined to examine the role of naïve beliefs:

RG2: The investigation of gender differences and naïve beliefs and their effects on responses to innovations, in particular perceived innovativeness.

In the first empirical part, study 1 showed that men and women responded differently to fluency experiences. It was suggested that men, rather than women, agreed to the belief that innovations seemed mostly complex at the beginning. Results showed that men preferred metacognitive difficulty whereas women responded more favorably to ease-of-processing. Concerning perceived innovativeness, men perceived a product to be more innovative than women did when fluency was low. This result gave reason to agree to the notion that men in general may respond more favorably to metacognitive difficulty in an innovation context. In order to test the naïve belief that ‘innovations seemed mostly complex at the beginning’ independent from the biological gender, the second study chose to test whether people who held this naïve belief were affected by metacognitive difficulty positively. It could be confirmed that people who held the belief responded more favorably to metacognitive difficulty than people who did not hold the belief. Accordingly, people, who believed that innovations seemed mostly complex at the beginning, were positively affected by metacognitive difficulty in their perception of innovativeness. The introduction of an innovativeness claim supported this positive effect and confirmed that consumers relied on reasonable explanations if they were externally offered. Although not all results in study 2 were statistically significant, the pattern of results allowed for the conclusion that naïve beliefs – if chronic or externally motivated – influenced the interpretation of fluency experiences in an innovation context. The significant results for the effects of metacognitive difficulty on purchase intention supported this notion. In regard to any gender differences in study 2, further tests surprisingly revealed that women agreed to the proposed naïve belief rather than men. These results somewhat contradicted the results from the first study, however demonstrated that men and women do indeed hold different naïve theories about innovations. To further investigate if a different naïve belief could account for different responses, study 3 followed the procedure outlined by Pocheptsova et al. (2010). The naïve belief was introduced that consumer electronics were mostly innovative to test whether participants who held this belief responded more favorably to metacognitive difficulty. Most of the results were not significant, but it could be shown that people who held this belief generally responded more favorably to the stimuli than people who did not hold the belief. Pocheptsova et al. (2010) could demonstrate that metacognitive difficulty positively affected the perception of product exclusivity at all events. The insignificant results of study 3,

which applied a font manipulation, revealed that metacognitive experiences did not affect consumers' responses and specifically that metacognitive *difficulty* did not influence perceived innovativeness positively at all events.

The question if a naïve belief that was externally induced affected consumers' responses to innovations was also addressed in the second empirical part. Since analogical learning has been investigated during the past several years as optimal means to communicate novel products, fluency experiences stemming from analogy similarity were of main interest. The third research goal was formulated as:

RG3: The examination of fluency of analogies and its effects on responses to innovations, in particular perceived innovativeness.

The second empirical part could confirm that analogy similarity accounted for fluency experiences. In particular, analogs that appeared to share sufficient relational similarities and some superficial similarities were perceived as more fluent than analogs that shared only relational similarities. Diverse dependent measures were covered. It was necessary to understand some rather psychology-related measures, such as attitudes towards the analogy and usefulness of the analogy. It could be shown that in the conditions where the advertisements were not presented with an innovativeness claim, people followed the usual fluency-liking link. They preferred an analogy and thought of it to be more useful when the analogs were highly similar and, hence, could be processed more fluently. Measures from marketing research followed this pattern. Subjects rated the product and the ad more favorably, perceived a product to be more innovative and showed higher purchase intentions, when an analogy was easy to process. These results could be largely confirmed across products. They underline the assumption that fluency experiences stemming from analogies do play a major role in perceiving innovations.

The results on the reversed fluency effect appeared to be more mixed. The focus was laid on the effect of metacognitive difficulty – in this case, stemming from a dissimilar analogy – on perceived innovativeness. A reversed fluency effect could be largely confirmed for the Tablet-PC; that is, when the advertisement explicitly stated the product was innovative, people attributed disfluency to perceived innovativeness. Similar patterns could be observed for all other dependent measures. Although the psychological measures (attitude towards the analogy and usefulness of the analogy) were affected only weakly, it could be shown that adding an innovativeness claim apparently had an effect in that similar analogies were liked less and dissimilar analogies were liked more; so the usual fluency-liking link diminished. A mediation

analysis strengthened these results. It could be shown that as soon as participants attributed their metacognitive difficulty to perceived innovativeness, purchase intentions raised. However, it has to be noted that also metacognitive ease could be attributed to perceived innovativeness. Inducing a naïve belief by stating the product to be innovative moderated the interpretation of fluency experiences. Results for the Media Player behaved differently. When the product was presented in an advertisement with an innovativeness claim, similar analogies were still superior to dissimilar analogies. A reversed fluency effect could not be obtained. Still, looking at the means, slightly different responses to the dependent measures in contrast to those in the no-innovativeness-claim-condition could be observed. Although this finding has to be addressed in future research, results in the second empirical part generally confirmed the important role of fluency experiences in analogical learning and specifically for the perception of product innovativeness.

The second empirical part also addressed the fourth research goal:

RG4: The investigation of the role of perceived innovativeness as a potential mediator between metacognitive experiences, specifically metacognitive difficulty, and purchase intention.

As already discussed, the mediation analysis demonstrated that perceived innovativeness mediated the relationship between metacognitive experiences and purchase intention. It could not be confirmed that metacognitive difficulty affected perceived innovativeness positively at all events. Instead, it was found that the interpretation was moderated by the presentation with an innovativeness claim (particularly in the case of the Tablet-PC). This finding contributes to the view that the interpretation of metacognitive difficulty depends on the judgment task; in particular, as researchers noted, the interpretation of metacognitive experiences can point into two directions. If a stimulus is easy to process, it can be rated as familiar or true, which is a positive outcome, or as dull and boring, which is a negative outcome. Likewise, if a stimulus is difficult to process, it can be rated as novel and exciting (positive outcome) or as risky (negative outcome). Only if participants either apply a chronic belief or are motivated by the judgment task, judgments may be reversed, so that ease may be interpreted as bad and difficulty as good, and the usual fluency-liking link may be reversed.

The following conceptual framework visualizes and summarizes the main idea of this dissertation on a more general level that comprises the studies conducted.

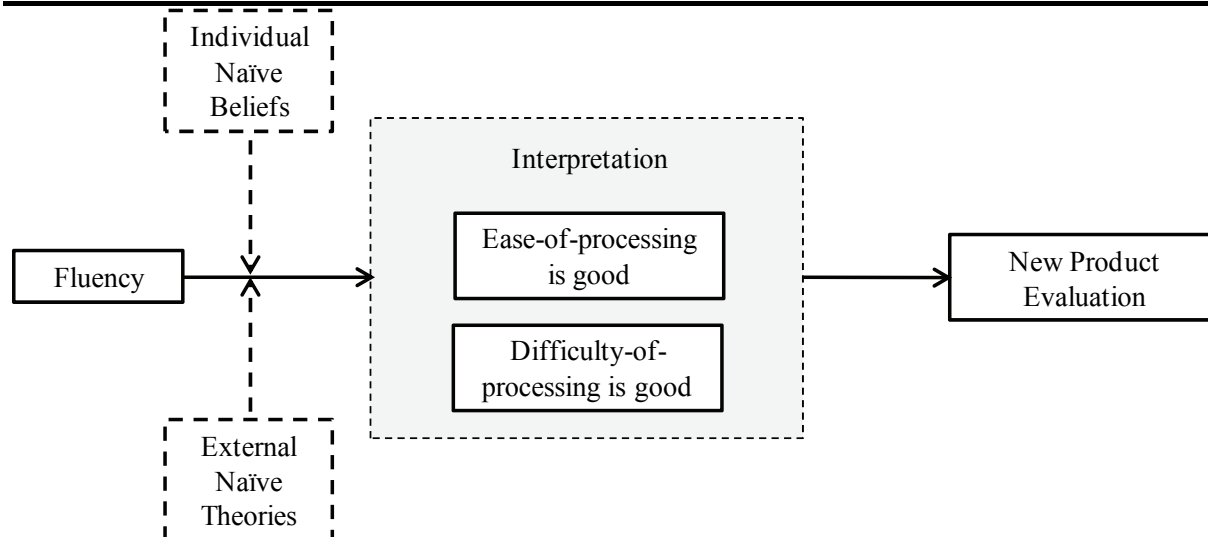


Figure 5-1: General framework of the dissertation

Taken together, these findings have several theoretical and managerial implications and limitations and leave room for future research.

5.2 Theoretical Contributions

Specific theoretical implications derived from the single empirical parts were discussed in chapters 3.5 and 4.4. The following sections provide a summary of theoretical contributions on a more general level. This work provides several theoretical implications for the research streams of fluency theory, analogical learning, and innovation diffusion research.

5.2.1 Contribution to Fluency Research and Analogical Learning

In order to study individual fluency experiences and their effects on consumers' responses to innovations, two different settings were chosen that allow for several theoretical contributions. First, the fluency manipulations in these studies provide evidence that informational complexity as well as analogies may account for fluency experiences. In the first empirical part, fluency manipulations of information complexity influenced consumers' responses while the font manipulation surprisingly had almost no effect, which may be subject to further research. The fluency manipulation of analogies in the second empirical part clearly contributes to "uniting the tribes of fluency" (Alter & Oppenheimer, 2009); it adds up to our understanding of new potential sources of metacognitive experiences.

Second, the studies contribute to recent research on the reversed fluency effect (e.g., Galak & Nelson, 2010; Pocheptsova et al., 2010). They shed light on whether metacognitive difficulty is attributed to perceived innovativeness at all events. Pocheptsova et al. (2010) showed that participants attributed metacognitive difficulty to product exclusivity by all means, and that a naïve belief moderated the relationship to the outcome of purchase intention. In contrast, this work demonstrates that perceived innovativeness may be affected by ease- as well as difficulty-of-processing. Naïve beliefs can be identified as a potential moderator of the interpretation of metacognitive experiences.

Third, this dissertation adds to an understanding of the influence and diversity of naïve beliefs. Chronic beliefs about innovations as well as naïve beliefs that were externally motivated could be shown to affect responses. Whereas existing research primarily examined more general naïve beliefs, such as about familiarity, frequency or novelty, this work explored specific naïve beliefs about innovations.

Fourth, the second empirical part demonstrates the mutually enriching relationship between analogical learning and fluency theory. The manipulation of analogy similarity could be clearly linked to fluency. It could be shown that analogies affected fluency experiences of consumers and could account for their responses (for an extensive discussion, see chapter 4.4), replicating findings from conventional research on fluency. Authors in marketing have focused on the ability of analogies to convey novel benefits (Feiereisen et al., 2008) and on the declarative content of product descriptions. This study provides new insights into the effects of analogies that go beyond the declarative content. It offers a new approach on how to compose analogies when communicating innovations. It was found that analogies that were easy to process are preferred over analogies that were difficult to process. Ease-of-processing was obtained by using a base analog that shared surface and relational similarities with the target analog. Difficulty-of-processing occurred when a base analog shared relational similarities only.

5.2.2 Contributions to Innovation Diffusion Research

First, research on innovation commercialization has primarily focused on content-driven responses to innovations. Following the tradition of Rogers (2003), authors have elaborated on the effects of Rogers' five innovation attributes and particularly focused on the relative advantage as the main driving factor of innovation performance without questioning if consumers who read an advertisement can fully understand the

new value, particularly in an initial encounter. “Put simply, there is more to thinking than what comes to mind” (Schwarz, 2004, p. 337). Following the extensive research on fluency theory, innovation diffusion research has to clearly integrate these findings to understand the underlying processes in perceiving innovations. In creating communication campaigns for innovations, marketers oftentimes face ‘two sides of the coin’. Since really new products do not neatly fit into existing product categories (Moreau, Markman et al., 2001) and create entirely new categories or markets, they are associated with new usage patterns a consumer has to learn (Gregan-Paxton et al., 2002) and, hence, make consumers reluctant. This work clearly indicates that product innovativeness can be understood as a value instead of as a threat to consumers; it provides ways how to mitigate consumers’ resistance towards discontinuity to consumers’ appreciation of discontinuity as a value (Ram & Sheth, 1989).

Second, this work clearly contributes to research on naïve beliefs in the context of innovations. The findings deliver evidence that some people do indeed hold the naïve belief that innovations are complex at the beginning, and that these people are positively affected by metacognitive difficulty. Furthermore, the naïve belief that consumer electronics are mostly innovative directly affected consumers’ responses. To the knowledge of the author, some related research only exists in the area of science education that examines what young people think of the relationship of technology, science and society (Aikenhead, Fleming, & Ryan, 1987; Aikenhead, Ryan, & Fleming, 1989). Furthermore, the work of Mick and Fournier (1998) provides some insights into consumers’ beliefs about technology. Avenues for further research on naïve beliefs in an innovation context will be discussed in section 5.5.2.1.

Third, this dissertation sheds light on the role of perceived innovativeness. The adapted scale of Boyd and Mason (1999) provides a good foundation of measuring perceived innovativeness from the consumer’s perspective. Based on this measurement, consumers are apparently able to judge how innovative a product is from an advertisement and appreciate product innovativeness reasonably well, so consumers may derive value from perceived innovativeness. The mediation analysis in the second empirical part identified perceived innovativeness to increase purchase intention. Neglecting perceived product innovativeness and only focusing on a technological or company’s perspective (cf. chapter 2.2) seems therefore shortsighted. The studies also provide evidence that very small changes in advertisements, such as the ad claim or a single word like ‘innovative’, can have a strong impact on how consumers perceive novel products; the findings underpin the notion that there is a strong need to better understand innovation marketing. Furthermore, just measuring

overall attitude towards the product or the benefit comprehension appears to be insufficient. Remember that the second empirical part measured the objective comprehension of benefits and the subjective usefulness of an analogy to understand the advertised products; although participants were objectively able to understand the benefits, the self-report measure on perceived usefulness of the analogy followed the usual fluency-liking link. Hence, even if consumers may objectively understand the benefits, stimulus fluency affects their subjective experiences. Especially in the context of innovations, when consumers encounter a novel product the first time, it is mandatory to understand why consumers perceive a product to be innovative – as a positively connotated outcome – and to understand the effects of perceived innovativeness.

5.3 Managerial Implications

5.3.1 Complexity in Advertising Design

This dissertation provides ample reasons for managers not only to focus on the declarative content of advertisements but also to consider metacognitive experiences that may arise. The studies conducted generally give reason to believe that conventional wisdom, which suggests to communicate as simply as possible, may be right to some extent. Major parts of the results confirmed that ease-of-processing is good. However, the findings also suggest that simplicity is not superior to complexity in all cases. On the one hand, different target groups that hold specific naïve beliefs may respond more favorably to difficult ad content than other people. Gender differences should thereby be considered as well. Furthermore, if the advertisement explicitly states that a product is innovative, ease-of-processing may be interpreted as bad; managers should therefore thoroughly re-think using terms like ‘innovative’ or ‘new’ but also related terms like ‘revolutionary’ or ‘the first’ that emphasize the discontinuity of the product. In turn, if advertisers cannot avoid metacognitive difficulty because the product needs explanation, they should consider providing a reasonable explanation for potential metacognitive difficulty experiences of recipients.

5.3.2 Segmenting Consumers

The second empirical part focused on how different target groups interpreted metacognitive experiences. As such, it provides useful, though restricted, insights into new segmenting approaches. Although the biological gender has been proposed to

allow simple and efficient differentiation, the obliteration of gender differences in attitudes and behavior calls for approaches that allow a differentiation between genders on the one hand and a differentiation within genders on the other hand. The measurement of the psychological gender has been suggested to be a fruitful way since it captures differences in femininity and masculinity independent from the biological gender (Bem, 1974; Fischer & Arnold, 1994; Feiereisen et al., 2009; see also chapter 3.5.4). However, measuring naïve beliefs of consumers and using them as a basis for further describing communication target groups appears to be an easier approach. Naïve beliefs are very easy to measure and allow for further discrimination as shown in studies 2 and 3. They help to clarify how consumers respond to metacognitive difficulty and even go beyond; naïve beliefs and theories influence a range of attitudes and behavior in a variety of domains. As such, they help to identify how specific target segments may respond to marketing actions and, hence, to develop and adapt effective marketing instruments (cf. Kotler, 1991).

5.3.3 Product Innovativeness

In general, the studies underline that the way a company communicates a novel product can indeed be pivotal for its success. A product may have the actual qualities and benefits due to its visual or technological features but if a company fails to choose the right communication strategy, advantages of novel features may be undermined or overemphasized. As Rindova and Petkova (2007) put it: “[...] innovating firms have to find a balance in helping customers cope with an innovation’s incongruity and its newness and freshness” (p. 228). Managers should carefully consider how to deal with visual or technological discontinuity and how they can convert it to perceived product innovativeness and a positive outcome for the customer in marketing communications. Furthermore, the adapted scale of Boyd and Mason (1999) provides a sound and stable measurement of perceived innovativeness for managers and sheds light on success factors of innovations. The findings provide evidence that measuring just the overall attitude towards the product does not provide sufficient insights for how consumers perceive novel products.

Although this dissertation contributes to research as well as practice, the results have to be interpreted in the light of several limitations.

5.4 Limitations

Limitations accounting for the single empirical parts have been discussed in chapters 3.5.3 and 4.4.3. First, it can generally be noted that except from the sample in study 1 in the first empirical part, ‘real’ consumers participated in the studies to account for some generalizability of results. The samples were chosen based on the premise that people from 20 to 40 years represent a highly interesting target group for marketers in the domain of consumer electronics. The sample is further representative in terms of education, job and salary in this target group. Still, one should be cautious in transferring these results to target groups other than investigated in these studies. Furthermore, external validity was accounted for by creating advertisements that were as realistic and professional as possible; so internal validity may have suffered particularly in the first study of the first empirical part. In the following studies, some advertisement elements had to be reduced, left out or intentionally manipulated in order to obtain the investigated effects. Since advertisements normally employ a range of different design and information elements, external validity is only given to a limited extent.

Second, as noted above, the integration of a product picture – although a usual approach in advertisement experiments – may have created additional complexity that affected the outcomes. For example, in the second empirical part the Tablet-PC and the Media Player produced different results. A potential source of the mixed results may lie in the products’ different visual complexity. Further research should account for this aspect.

Third, the presented studies only investigated effects on consumer electronics; a transfer to other products is limited. Consumer electronics possess technological features that other products, such as food products or cosmetics, do not possess. And even in the exclusive domain of consumer electronics, products are comparable only to a limited extent. The results demonstrate that consumers may respond differently to very similar products, such as the Tablet-PC and the E-Reader. A potential source for these mixed results may be found in the products’ inherent innovativeness that cannot be influenced by any marketing measures. The mixed results from research on analogical learning, as demonstrated in chapter 4.1.2, underline this suspicion. Future research should identify further product attributes that differentiate products from the same domain and include these as manipulation factors.

5.5 Future Research

Several suggestions were made on how future research could resolve specific issues and investigate further topics derived from the studies of this work. The following section summarizes avenues for future investigation on a more general level.

5.5.1 Potential Mediators

As already elaborated on, the findings of this work do not allow the conclusion that metacognitive difficulty enhances perceived innovativeness at all events. Furthermore, the role of perceived innovativeness as a mediator could only be supported in the second empirical part. Of future interest is the question whether there are other potential mediators that affect the relationship between metacognitive experiences and perceived innovativeness. For example, product attributes such as exclusivity, uniqueness, novelty or discontinuity appear to be reasonable and applicable measures. Furthermore, the role of affective responses as potential mediators seems a promising approach. In general, the work of Berlyne (1960; 1967), which influenced research on fluency and the mere exposure effect, suggested to include variables that captured states of arousal or excitement resulting from the complexity, novelty or incongruity of stimuli. Building on the pleasure-arousal-dominance-paradigm (PAD) (Mehrabian & Russell, 1974), Kulviwat and colleagues (2007) found that, in addition to cognition, affective responses influenced attitude towards the adoption of technological innovations. Wood and Moreau (2006) found that emotions consumers felt in the early experience with a product influenced product adoption in the long term. In the context of this work, affective responses resulting from metacognitive experiences may be considered potential mediators that influence product-related measures such as perceived innovativeness or purchase intention. They might be able to deepen our knowledge of why metacognitive difficulty may or may not influence perceived innovativeness and contribute to a better understanding of individual underlying processes in the perception of innovations.

5.5.2 Individual Factors

5.5.2.1 *Naïve Beliefs*

As discussed throughout this dissertation, naïve beliefs determine how fluency experiences are interpreted. As demonstrated in other domains, naïve theories can account for a range of attitudes and judgments (e.g., Van Boven, Dunning, &

Loewenstein, 2000; Morris, Menon, & Ames, 2001; Novemsky & Ratner, 2003). For example, Wang et al. (2010) demonstrated that individual lay beliefs and lay theories embodied in health products had an effect on consumer preferences for health remedies and healthy lifestyle intentions. In a recent study, Mukhopadhyay and Johar Venkataramani (2005) provided evidence that naïve beliefs also determined behavior. Although these studies have provided empirical evidence that naïve beliefs may have a strong and enduring effect in a diversity of domains, research on innovations has – to the knowledge of the author – largely ignored the power of naïve beliefs. Building knowledge of naïve beliefs about innovations promises a fruitful area of investigation.

The work of Mick and Fournier (1998) provides a useful foundation to investigate naïve beliefs in an innovation context. They identified eight paradoxes of technology society lives with: control vs. chaos, freedom vs. enslavement, new vs. obsolete, competence vs. incompetence, efficiency vs. inefficiency, fulfills vs. creates needs, assimilation vs. isolation, engaging vs. disengaging (Mick & Fournier, 1998, p. 126). These paradoxes can be easily translated into naïve beliefs; for example, Mick and Fournier (1998) argued that some people think that “technology is always beneficial” (p. 140; they call it the “positivity bias”). Likewise, one could argue that independent from the product category, innovations can alternate between usefulness vs. redundancy, value of novelty vs. risk, excitement vs. complexity and uniqueness vs. discontinuity, and so on. In order to cope with these paradoxes, individuals might hold different naïve theories about innovations that help to classify what they perceive. As Rindova and Petkova (2007) put it: “[...] customers vary in their preferences for and ability to cope with product novelty” (p. 227).

Furthermore, naïve beliefs may provide a strong foundation for the investigation of target groups and their adoption behavior. Classical innovation diffusion research has primarily focused on dividing the late majority from resisters (Rogers, 2003) or has investigated personal characteristics, such as personal innovativeness (e.g., Goldsmith & Hofacker, 1991; Roehrich, 2004; Tellis, Yin, & Bell, 2009), need for change (Wood & Swait, 2002) or novelty seeking (e.g., Herrmann & Küster, 2011). But “[...] this predilection [may be] potentially oversimplifying and even condescending.” Consumers who reject to adopt innovations from the very beginning may have “[...] ample reasons to be skeptical and cautious” (Mick & Fournier, 1998, p. 141). Research as well as practitioners are well-advised to investigate and manage the perceived “dark and bright side” of innovations (Y. Lee & Colarelli O'Connor, 2003, p. 5) from a consumers’ perspective. Enhancing our knowledge about naïve beliefs and combining it with existing findings on traits such as personal innovativeness or novelty seeking

may help to better identify customers' needs in marketing communications. In this context, qualitative instead of experimental research may be a good approach to find a range of naïve beliefs in an innovation context in order to provide a foundation for further quantitative research.

5.5.2.2 *Cognitive Resources*

Further investigation is needed on the dedication of cognitive resources when perceiving and evaluating products in marketing communications. Dual-process models of judgment and attitude changes (Petty et al., 1983; Chaiken, Liberman, & Eagly, 1989) have suggested that the amount of cognitive resources people devote to a task – expressed in constructs such as involvement and personal relevance or need for cognition (the tendency to enjoy and engage in effortful thinking, cf. Cacioppo & Petty, 1982) – moderate the use of different processing strategies. According to this research stream, people apply a heuristic processing strategy when they are low-involved or low in need for cognition, relying on rather superficial cues. In contrast, individuals follow a systematic processing strategy when they are high-involved or high in need for cognition, processing the declarative content more thoroughly (Petty et al., 1983). Whereas dual-process models of judgment have been applied in various consumer behavior contexts (e.g., Wentzel, Tomczak, & Herrmann, 2010), studies on processing fluency have only begun to integrate these findings (Schwarz, 1998; Haddock et al., 1999). Rothman and Schwarz (1998), for example, found that people assessed their health risk not solely based on accessible information from memory but that fluency experiences dominated evaluations when the issue of health risks was not personally relevant. In their conference paper, Cho and Schwarz (2006) provided first evidence for a moderating role of cognitive resources in an innovation context. The authors showed that only individuals low in need for cognition preferred the product when it was presented with low fluency, i.e., when the font was difficult to read and when they were first asked for product innovativeness. However, individuals high in need for cognition preferred the product when presented with high fluency, i.e., when the font in the advertisement was easy to read, apparently evaluating the declarative content of the advertisement. Gender differences also play a role when it comes to the discrimination of individual processing (cf. section 3.5.4). Since naïve beliefs could be found to serve as moderators in this work, a promising approach for further research may be the investigation of the moderating effects of cognitive resources and their interplay with naïve beliefs.

5.5.3 Contextual Factors

Since this work focused on the investigation of innovation perception in a specified context, namely consumer electronics, further avenues for research lie in the investigation of different contextual factors. Various levels of technological innovativeness (e.g., really new products vs. incrementally new products) or different visual complexity or products from other product categories than investigated may be of interest (for example, Mukherjee & Hoyer, 2001). Rindova and Petkova (2007), for example, argued that if a product was technologically very advanced, product design might help to simplify the product. In turn, if a product was technologically less advanced, it might be beneficial to enhance the complexity of the product design. Based on fluency and analogy research, a similar approach might be valid for text elements in advertisements; it might be good advice to emphasize the discontinuous product features under some circumstances (cf. Ziamou, 2002). Findings from the second empirical part demonstrated that fluency experiences resulted in different responses than expected in the case of the Media Player. A potential explanation lies in the difference of visual complexity between the Tablet-PC and the Media Player. Whereas the Media Player appears very simple in its design, the Tablet-PC is visually more complex. Integrating these effects in further research seems to be particularly interesting when introducing a product to the market; people often encounter novel products in advertisements and have to judge from what they see. It is a challenge for marketers not only to contribute during the development phase to new product design (Rindova & Petkova, 2007), but it is also mandatory to understand the underlying mechanisms of both product and advertisement design that work together. Furthermore, it would be worthwhile exploring whether innovations that are inherently less complex than technological innovations, such as cosmetic products or functional food, underlie different interpretations of metacognitive difficulty. It is very apparent in today's advertisements, that technical-appearing terms and the words 'innovation' and 'innovativeness' are used even for products that are not technological products. Do marketers seek to increase metacognitive difficulty in order to answer to customers' naïve beliefs about innovations? In addressing this question, it seems a promising approach to investigate the role of metacognitive experiences for different types of products. To further account for linguistic effects, additional ways of fluency manipulations could be applied, such as the technical (cf. Putrevu et al., 2004) or syntactic complexity of a text (cf. Lowrey, 1998).

Experimental investigation leaves more room in order to disentangle the effects of fluency experiences. For example, various studies (Bornstein & D'Agostino, 1992;

Novemsky et al., 2007; Alter & Oppenheimer, 2009; Pocheptsova et al., 2010) have shown that when a consumer's attention is drawn to the source of her or his metacognitive difficulty, a discounting effect occurs and fluency experiences do not affect judgments anymore. Whereas these studies used experimental means to draw the individual's attention to the fluency source, it would be worthwhile investigating whether a discounting effect can also occur when the consumer feels the company is playing games, exaggerating its attempt to artificially build metacognitive difficulty. For example, the advertisements for the dairy drink 'Actimel' were filled with pseudo-technical terms, apparently with the goal to emphasize the superior benefit it had to other dairy products. Customers, however, saw through the advertisement strategy and 'Actimel' was soon exposed to be a 'marketing lie' (Anonymous, 2009). A potential mistake might have been to overly emphasize the scientific benefit of the product by creating a complex, artificially scientific language. To a certain extent, consumers were probably able to discount their fluency experiences to the source of an artificially created marketing-language. Further research should therefore explore this aspect.

5.5.4 Dynamic Aspects of Innovation Communication

Whereas this research has focused on the initial exposure of novel products, the dynamic aspects of communicating novel products are also of interest for further research. In particular, it should be explored how managers can deal with time aspects. Several research streams provide solid foundations to further investigate these aspects.

A central idea of the mere-exposure effect is that people (mis)attribute perceptual fluency to liking although the fluency with which the stimulus can be processed stems from previous exposure (Zajonc, 1968; Bornstein, 1989; Bornstein & D'Agostino, 1992; A. Y. Lee, 2001). Based on this premise, Landwehr and colleagues (Landwehr et al., 2009; Landwehr, Wentzel, & Herrmann, 2010) suggested that, after repeated exposure, consumers might not only rely on the fluency signal but consider additional information which affected responses in the way that familiar stimuli became boring and unfamiliar stimuli exciting. They found that, after repeated exposure, cars that were prototypical in design and elicited a hedonically marked effect at the beginning, became less attractive. In contrast, cars that were atypical and therefore less favored in the beginning became more attractive after repeated exposure. Furthermore, whereas sales of a typical car increased in its early phase, atypical cars were found to take more time to reach their sales peak and, at the same time, showed a slower rate of decline. The authors concluded that atypical designs might be even more successful than prototypically designed cars in the long run (Landwehr et al., 2010). In a similar vein,

Lévy and colleagues (2006) investigated how the repeated exposure to products that differed in perceived complexity affected liking. Based on the arousal theory of Berlyne (1967; 1970) and the ‘Pacer’ theory of Dember and Earl (1957), they argued that people had an initial individual optimum level of complexity and that only products higher in their perceived complexity than this individual optimum would shift this optimum to a higher level and increase liking for complex stimuli. They found that when participants were repeatedly presented with drinks that were simple a general loss in interest occurred. When they were repeatedly exposed to a complex drink, perceived complexity decreased and liking increased. Transferred to the findings of this work, it could be investigated how ad content should be adapted for the different communication stages, such as the pre-announcement phase, the market introduction and later stages. For example, as found in this work, analogies may be perceived more or less fluent in an initial encounter. If no reasonable explanation was provided for metacognitive difficulty of analogies, the similar (fluent) analogy was found to be superior of the dissimilar (disfluent) analogy. Integrating existing findings, it may be considered that analogies that are perceived as disfluent in the beginning may be perceived as more fluent after repeated exposure and may even change people’s individual optimum levels of perceived complexity. As such, they may be better able to keep consumers’ attention in the long run. Relating to analogy research, disfluent analogies may even support a better understanding of the product in the long-term because they encourage consumers to lay more cognitive effort into comprehension after repeated exposure. It may also be of interest if analogies in a pre-announcement-phase should be different from those in a later stage. For example, Homburg and colleagues (2009) stated that performance uncertainty at the customer’s side was dominant during a product launch and a relative advantage might not have become apparent. Findings of this dissertation underpin this notion and, at the same time, suggest that fluent (similar) analogies may be helpful in the beginning to counteract performance uncertainty. In contrast, disfluent (dissimilar) analogies may be more exciting during the subsequent communication stages and may support the comprehension of the relative advantage in the long term because they promote a thorough relational mapping.

When marketers design ad content, they also make decisions about how to position a novel product. Based on the temporal construal theory, Alexander, Lynch Jr., and Wang (2008) found that consumers were less likely to follow their initial intentions for really new products than for incrementally new products. The authors made a valid point when they suggested that “[m]arketers may be better served by positioning a

product as an incremental rather than a revolutionary improvement” (Alexander et al., 2008, p. 318). In the light of the findings of this work, further research should consider the dynamic aspects of adoption to better understand how to position a novel product and to what extent to emphasize innovativeness on the expense of benefit comprehension or the other way round in different product life cycle stages and hence in different communication stages. It is mandatory to adapt communication strategies to this decision because even the tiniest ad element has the potential to influence consumers’ perceptions. As noted above, an analogy can relate a novel product to existing products in that it emphasizes its novelty, thereby fostering consumers’ fears of risk and performance uncertainty, or it helps to understand the novel product based on existing knowledge, thereby potentially hampering the value of novelty.

In further investigating the reversed fluency effect, findings from literature on repeated exposure should also be considered. Findings of this work suggest that effects of metacognitive difficulty alter when target groups hold different naïve beliefs or a reasonable explanation is offered. Consequently, if the classical fluency effect is already reversed during an initial exposure, this should have an effect in the long term, such that metacognitive difficulty cannot keep consumers’ attention or that an innovativeness claim becomes phony. As Brinol et al. (2006) noted: “Given that the mere-exposure effect had often been thought to stem from differences in processing fluency, the current findings suggest that changing the meaning of such fluency might change the direction of the classic effect” (p. 205).

5.6 General Conclusion

This research ultimately demonstrated that the sole understanding of benefits by a consumer may not be the strongest driver for product adoption and marketing communications should therefore consider a range of factors. As Lee and Colarelli O’Connor (2003) noted: “Innovativeness itself does not guarantee success. [...] Without an appropriate introduction strategy, a product’s innovativeness may be perceived by customers as offering uncertainty and risk rather than as providing superior benefits” (p. 5). This work has hopefully inspired researchers to further investigate individual underlying processes in perceiving innovations and to take new routes in exploring them.

6 References

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7 Appendices

7.1 Appendix 1: Stimuli Used in Empirical Part I

7.1.1 Experiment 1

NEU

DigiRead
Connected Reading.

Jetzt im Fachhandel erhältlich.
CHF 349.-*

*Unverbindliche Preisempfehlung

DigiRead definiert digitales Lesen neu. DigiRead ermöglicht unangestregtes Lesen wie auf Papier. Und das mobil, wochenlang, formatübergreifend. DigiRead ist ergonomisch über seitlich angebrachte Touch-Elemente einhändig zu bedienen. Intuitiv navigierst Du selbst durch umfangreiche Textsammlungen, die Du auch über die Online-Plattform digiread.com verwalten kannst. DigiRead setzt e-Link-Technologie ein, die auf dem 6" Visplex Display mit 600x800 Pixeln auch bei heller Sonneneinstrahlung hoch aufgelöste Texte und Bilder in bis zu 16 Graustufen garantiert.

Figure 7-1: Advertisement high in fluency

Translation of the copy text:

DigiRead redefines digital reading. DigiRead allows for effortless reading just like from paper – on the go, for weeks and for multiple formats. DigiRead can be ergonomically operated with one hand thanks to its touch elements on the side. You can intuitively navigate through extensive text collections that you can also manage on the online platform digiread.com. DigiRead employs e-link technology that guarantees, even under direct sunlight, high resolution texts and pictures in up to 16 different grey shades on the 6" Visplex Display with 600x800 pixels.



NEU

DigiRead
Connected Reading.

Jetzt im Fachhandel erhältlich.
CHF 349,-*

Intelligentes Energie-Management ermöglicht besonders lange Akkulaufzeiten für wochenlanges, unterbrechungsfreies Lesen. Mit DigiRead ist es über UMTS und WLAN möglich, unkompliziert und synchronisiert auf eBook-Texte zuzugreifen. Darüber hinaus bietet DigiRead die erste offene Lösung, die

alle anderen Arten von digitalen Dokumenten lesbar macht. Durch den optimierten Display-Controller reagiert DigiRead schneller als andere Geräte. Die integrierte Online-Plattform digiread.com verwaltet ebenso alle Arten von digitalen Dokumenten – von eBooks über MS Office 2007-Dateien bis zu PDFs und ePub-Formaten. Dabei können unterschiedliche Versionen von Dokumenten, auch Webclips, gespeichert, aktualisiert und geordnet werden. DigiRead setzt e-Link-Technologie ein, die auf dem 6'' Visplex Display mit 600x800 Pixeln auch bei heller Sonneneinstrahlung hoch aufgelöste Texte und Bilder in bis zu 16 Graustufen garantiert.

*Unverbindliche Preisempfehlung

Figure 7-2: Advertisement low in fluency

Translation of the copy text:

DigiRead redefines digital reading. DigiRead allows for effortless reading just like from paper – on the go, for weeks and for multiple formats. DigiRead can be ergonomically operated with one hand thanks to its touch elements on the side. You can intuitively navigate through extensive text collections that you can also manage on the online platform digiread.com.

Intelligent energy management provides exceptionally long battery life enabling interruption-free reading for weeks. With DigiRead eBook texts can be easily accessed and synchronized over UMTS and WLAN. On top of that, DigiRead offers the first open solution that makes all types of documents readable. Due to the optimized Display Controller DigiRead reacts faster than any other device. The integrated online platform digiread.com also manages all types of documents – from eBooks and MS Office 2007 files to PDFs and ePub formats. All different versions of documents and even web clips can be saved, updated and organized.

DigiRead employs e-link technology that guarantees, even under direct sunlight, high resolution texts and pictures in up to 16 different grey shades on the 6'' Visplex Display with 600x800 pixels.

7.1.2 Experiment 2

TM3000.



Mit dem TM3000 ist mobiles Schreiben, Zeichnen, Bücherlesen und Videoschauen einfach wie nie zuvor, ob auf Reisen, im Business-Meeting oder Zuhause. Der TM3000 wird über einen digitalen Pen, mit den Fingern oder der digitalen Tastatur bedient. Zwei Bildschirme garantieren beste Übersichtlichkeit über Ihre Dateien.

Auf einer Website können Sie auf Texte, die Sie im TM3000 geschrieben haben, auch von Ihrem PC oder Mac aus zugreifen und sie bearbeiten. Zusammengeklappt ist das TM3000 mit 32 GB Speicherplatz nur 2 cm dick, 500 Gramm leicht und nicht grösser als ein 13 x 9 cm-Foto.

TM3000.



Mit dem **neuen, innovativen** TM3000 ist mobiles Schreiben, Zeichnen, Bücherlesen und Videoschauen einfach wie nie zuvor, ob auf Reisen, im Business-Meeting oder Zuhause. Der TM3000 wird über einen digitalen Pen, mit den Fingern oder der digitalen Tastatur bedient. Zwei Bildschirme garantieren beste Übersichtlichkeit über Ihre Dateien. Auf einer Website können Sie auf Texte, die Sie im TM3000 geschrieben haben, auch von Ihrem PC oder Mac aus zugreifen und sie bearbeiten. Zusammengeklappt ist das TM3000 mit 32 GB Speicherplatz nur 2 cm dick, 500 Gramm leicht und nicht grösser als ein 13 x 9 cm-Foto.

Figure 7-3: Advertisement high in fluency (without and with innovativeness claim)

Translation of the copy text:

The (new, innovative) TM3000 makes mobile writing, drawing, reading books and watching movies easier than ever before - whether during travel, in a business meeting or at home. The TM3000 is operated by a digital pen, your fingers or a digital keypad. Two screens guarantee an optimal overview of your files.

On a website, texts that you have written on the TM3000 can be retrieved and edited on your Mac or PC. The TM3000, with its 32GB storage space, measures only 2 cm in height, weighs less than 500 grams and is not bigger than a 13x9 cm picture when folded.



TM3000.

Mit dem TM3000 ist mobiles Schreiben, Zeichnen, Lesen und auch Videoschauen einfach wie nie zuvor. Ob auf Reisen, im Business-Meeting oder einfach Zuhause, alleine oder mit anderen, für Studenten, Manager, Kreative, Hobby-Künstler oder Filmfreaks, der TM3000 bietet Ihnen bei jeder Gelegenheit die passenden Features und Funktionen. Zwei Multitouch-Displays garantieren optimale Übersichtlichkeit über Ihre eigenen Texte und Zeichnungen, die Sie auf dem TM3000 erstellen und anfertigen können. Auch elektronische Bücher oder Videos, die Sie auf das TM3000 zuvor geladen haben, können Sie jederzeit lesen und betrachten. Der Dual-Multitouch-Bildschirm kann dank der Schrifterkennung über einen digitalen Pen, mit den Fingern oder über die digitale Tastatur bedient werden. Sie können jederzeit problemlos wechseln zwischen handschriftlichen und digital eingegebenen Notizen oder Texten. Eine dazugehörige Webseite kann als externe Speicherquelle genutzt werden und erlaubt auch von Ihrem PC oder Mac aus Zugriff auf ein Blog-ähnliches Format, das alles darstellt, was Sie an Texten oder Notizen in Ihr TM3000 zuvor eingegeben haben. Sämtliche Einträge können darüber hinaus mit zusätzlichen Kommentaren durch Sie versehen und bearbeitet werden. Zusammengeklappt ist das TM3000 nur 2 cm dick. Es wiegt weniger als 500 Gramm und misst nicht mehr als ein 13 x 9 cm-Foto. Ganze 32 GB Speicherplatz lassen genug Raum für alle Dateien jeglichen Formats.



TM3000.

Mit dem **neuen, innovativen** TM3000 ist mobiles Schreiben, Zeichnen, Lesen und auch Videoschauen einfach wie nie zuvor. Ob auf Reisen, im Business-Meeting oder einfach Zuhause, alleine oder mit anderen, für Studenten, Manager, Kreative, Hobby-Künstler oder Filmfreaks, der TM3000 bietet Ihnen bei jeder Gelegenheit die passenden Features und Funktionen. Zwei Multitouch-Displays garantieren optimale Übersichtlichkeit über Ihre eigenen Texte und Zeichnungen, die Sie auf dem TM3000 erstellen und anfertigen können. Auch elektronische Bücher oder Videos, die Sie auf das TM3000 zuvor geladen haben, können Sie jederzeit lesen und betrachten. Der Dual-Multitouch-Bildschirm kann dank der Schrifterkennung über einen digitalen Pen, mit den Fingern oder über die digitale Tastatur bedient werden. Sie können jederzeit problemlos wechseln zwischen handschriftlichen und digital eingegebenen Notizen oder Texten. Eine dazugehörige Webseite kann als externe Speicherquelle genutzt werden und erlaubt auch von Ihrem PC oder Mac aus Zugriff auf ein Blog-ähnliches Format, das alles darstellt, was Sie an Texten oder Notizen in Ihr TM3000 zuvor eingegeben haben. Sämtliche Einträge können darüber hinaus mit zusätzlichen Kommentaren durch Sie versehen und bearbeitet werden. Zusammengeklappt ist das TM3000 nur 2 cm dick, wiegt weniger als 500 Gramm und misst nicht mehr als ein 13 x 9 cm-Foto. Ganze 32 GB Speicherplatz lassen genug Raum für alle Dateien jeglichen Formats.

Figure 7-4: Advertisements low in fluency (without and with innovativeness claim).

Translation of the copy text:

The (new, innovative) TM3000 makes mobile writing, drawing, reading books and watching movies easier than ever before. Whether during travel, in a business meeting or at home, alone or in company, for students, managers, bohemians, hobby artists or movie freaks – the TM3000 provides all the appropriate features and functions. Two multi-touch displays guarantee an optimal overview of your texts and drawings, which you can write and create on the TM3000. Electronic books and videos that have been uploaded on the TM3000 can also be read and watched anytime. Due to character recognition, the dual multi-touch screens can be operated by a digital pen, your fingers or a digital keypad. You can easily switch between handwritten and digitally entered notes and texts. An appertaining website, which serves as external storage source, allows access from your PC or Mac to a blog-like format that consolidates texts that you have written on the TM3000. Furthermore, all entries can be edited with comments by you and others. The folded TM3000 measures only 2 cm in height. It weighs less than 500 grams and is not bigger than a 13x9 cm picture. 32GB storage space leaves enough space for files of any formats.

7.1.3 Experiment 3



TM3000.

Mit dem TM3000 ist mobiles Schreiben, Zeichnen, Bücherlesen und Videoschauen einfach wie nie zuvor, ob auf Reisen, im Business-Meeting oder Zuhause. Der TM3000 wird über einen digitalen Pen, mit den Fingern oder der digitalen Tastatur bedient. Zwei Bildschirme garantieren beste Übersichtlichkeit über Ihre Dateien.

Auf einer Website können Sie auf Texte, die Sie im TM3000 geschrieben haben, auch von Ihrem PC oder Mac aus zugreifen und sie bearbeiten. Zusammengeklappt ist das TM3000 mit 32 GB Speicherplatz nur 2 cm dick, 500 Gramm leicht und nicht grösser als ein 13 x 9 cm-Foto.



TM3000.

Mit dem **neuen, innovativen** TM3000 ist mobiles Schreiben, Zeichnen, Bücherlesen und Videoschauen einfach wie nie zuvor, ob auf Reisen, im Business-Meeting oder Zuhause. Der TM3000 wird über einen digitalen Pen, mit den Fingern oder der digitalen Tastatur bedient. Zwei Bildschirme garantieren beste Übersichtlichkeit über Ihre Dateien. Auf einer Website können Sie auf Texte, die Sie im TM3000 geschrieben haben, auch von Ihrem PC oder Mac aus zugreifen und sie bearbeiten. Zusammengeklappt ist das TM3000 mit 32 GB Speicherplatz nur 2 cm dick, 500 Gramm leicht und nicht grösser als ein 13 x 9 cm-Foto.

Figure 7-5: Advertisements (Tablet-PC) high in fluency (without and with innovativeness claim).

Translation of the copy text: see experiment 2.



DR3000.

Der DR3000 ermöglicht unangestregtes Lesen wie auf Papier. Und das mobil, über einen langen Zeitraum und formatübergreifend. Der DR3000 ist ergonomisch über seitlich angebrachte Touch-Elemente einhändig zu bedienen. Selbst umfangreiche Textsammlungen haben Sie damit fest

im Griff, die Sie auch über eine dazugehörige Online-Plattform verwalten können. Der DR3000 setzt e-Link-Technologie ein, die auf dem grossen Bildschirm auch bei heller Sonneneinstrahlung hoch aufgelöste Texte und Bilder in bis zu 16 Graustufen garantiert.



DR3000.

Der *neue, innovative* DR3000 ermöglicht unangestregtes Lesen wie auf Papier. Und das mobil, über einen langen Zeitraum und formatübergreifend. Der DR3000 ist ergonomisch über seitlich angebrachte Touch-Elemente einhändig zu bedienen. Selbst umfangreiche Textsammlungen haben Sie damit fest

im Griff, die Sie auch über eine dazugehörige Online-Plattform verwalten können. Der DR3000 setzt e-Link-Technologie ein, die auf dem grossen Bildschirm auch bei heller Sonneneinstrahlung hoch aufgelöste Texte und Bilder in bis zu 16 Graustufen garantiert.

Figure 7-6: Advertisements (E-Reader) high in fluency (without and with innovativeness claim).

Translation of the copy text:

The (new, innovative) DR3000 allows for effortless reading like from paper – on the go, over a long time period and for multiple formats. The DR3000 can be ergonomically operated with one hand thanks to its attached touch elements on the side. Even comprehensive collections of texts can be handled and managed with the bundled appertaining online platform. Due to the e-link technology employed, the big screen of the DR3000 guarantees, even under direct sunlight, high resolution texts and pictures in 16 different grey shades.

TM3000.



Mit dem TM3000 ist mobiles Schreiben, Zeichnen, Bücherlesen und Videoschauen einfach wie nie zuvor, ob auf Reisen, in Business-Meeting, oder Zuhause. Der TM3000 wird über einen digitalen Pen, mit dem Fingern oder der digitalen Tastatur bedient. Zwei Bildschirme garantieren beste Übersichtlichkeit über Ihre Dateien.

Auf einer Website können Sie auf Texte, die Sie im TM3000 geschrieben haben, auch von Ihrem PC oder Mac aus zugreifen und sie bearbeiten. Zusammengeklappt ist das TM3000 mit 32 GB Speicherplatz nur 2 cm dick, 500 Gramm leicht und nicht grösser als ein 13 x 9 cm Foto.

TM3000.




Mit dem **neuen, innovativen** TM3000 ist mobiles Schreiben, Zeichnen, Bücherlesen und Videoschauen einfach wie nie zuvor, ob auf Reisen, in Business-Meeting, oder Zuhause. Der TM3000 wird über einen digitalen Pen, mit dem Fingern oder der digitalen Tastatur bedient. Zwei Bildschirme garantieren beste Übersichtlichkeit über Ihre Dateien. Auf einer Website können Sie auf Texte, die Sie im TM3000 geschrieben haben, auch von Ihrem PC oder Mac aus zugreifen und sie bearbeiten. Zusammengeklappt ist das TM3000 mit 32 GB Speicherplatz nur 2 cm dick, 500 Gramm leicht und nicht grösser als ein 13 x 9 cm Foto.

Figure 7-7: Advertisements (Tablet-PC) low in fluency (without and with innovativeness claim).


Translation of copy text: see experiment 2.

DR3000.



Der DR3000 ermöglicht unangestregtes Lesen wie auf Papier. Und das mobil über einen langen Zeitraum und formatübergreifend. Der DR3000 ist ergonomisch über seitlich angebrachte Touch-Elemente einhändig zu bedienen. Selbst umfangreiche Textsammlungen haben Sie damit fest im Griff, die Sie auch über eine dazugehörige Online-Plattform verwalten können. Der DR3000 setzt e-ink-Technologie ein, die auf dem grossen Bildschirm auch bei heller Sonneneinstrahlung hoch aufgelöste Texte und Bilder in bis zu 16 Graustufen garantiert.

DR3000.



Der **neue, innovative** DR3000 ermöglicht unangestregtes Lesen wie auf Papier. Und das mobil über einen langen Zeitraum und formatübergreifend. Der DR3000 ist ergonomisch über seitlich angebrachte Touch-Elemente einhändig zu bedienen. Selbst umfangreiche Textsammlungen haben Sie damit fest im Griff, die Sie auch über eine dazugehörige Online-Plattform verwalten können. Der DR3000 setzt e-ink-Technologie ein, die auf dem grossen Bildschirm auch bei heller Sonneneinstrahlung hoch aufgelöste Texte und Bilder in bis zu 16 Graustufen garantiert.

Figure 7-8: Advertisements (E-Reader) low in fluency (without and with innovativeness claim).

Translation of the copy text: see advertisements high in fluency of this study.

7.2 Appendix 2: Stimuli Used in Empirical Part II



Figure 7-9: Advertisements (Tablet-PC) high in fluency (without and with innovativeness claim).

Translation of the advertisement:

TM3000 – Like a diary.

Not bigger than a 13 x 9 cm picture, the (innovative) TM3000 collects anything you write, draw and research on the go.



Figure 7-10: Advertisements (Media Player) high in fluency (without and with innovativeness claim).

Translation of the advertisement:

WD3000 – Like a DVD player.

Small and compact, the (innovative) WD3000 streams music, movies and pictures from the internet, your computer and directly from the USB-Stick to your TV.

TM3000 – Wie ein Lagerraum.



Zusammengeklappt nicht größer als ein 13x9-Foto, sammeln Sie im TM3000 alles, was Sie unterwegs schreiben, zeichnen und recherchieren.

TM3000 – Wie ein Lagerraum.



Zusammengeklappt nicht größer als ein 13x9-Foto, sammeln Sie im **innovativen** TM3000 alles, was Sie unterwegs schreiben, zeichnen und recherchieren.

Figure 7-11: Advertisements (Tablet-PC) low in fluency (without and with innovativeness).

Translation of the advertisement:

TM3000 – Like a storage room.

Not bigger than a 13 X 9 cm picture, the (innovative) TM3000 collects anything you write, draw and research on the go.



Figure 7-12: Advertisements (Media Player) low in fluency (without and with innovativeness claim).

Translation of the advertisement:

WD3000 – Like a distribution room.

Small and compact, the (innovative) WD3000 streams music, movies and pictures from the internet, your computer and directly from the USB-Stick to your TV.

Curriculum Vitae

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