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# The Creative Consumer: Exploring consumer behavior from a creativity perspective

BY  
MARIT GUNDERSEN ENGESET



CEMS



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## **The Creative Consumer: Exploring consumer behavior from a creativity perspective**

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**MARIT GUNDERSEN ENGESET**

# The Creative Consumer:

Exploring Consumer Behavior from a Creativity  
Perspective

Marit Gundersen Engeset



*This dissertation is dedicated to the memory of my father, Kåre Normann Gundersen (1930–2005)*

“Imagination is the beginning of creation.  
You imagine what you desire,  
you will what you imagine,  
and at last you create what you will.”  
*George Bernard Shaw*



## **Abstract**

This research focuses on consumer creativity and uses frameworks from creativity theory to understand consumer behavior. Because this is a relatively new field of inquiry, the work belongs mainly in the context of discovery. Therefore, the topic was approached in an open, exploratory manner. Instead of formal hypotheses, a set of propositions and models were developed and tested empirically in a field study.

Four concepts relevant to the understanding of consumer behavior from a creativity perspective are advanced: (1) *creative cognitive processing*, or the degree to which consumers engage in creative processing during decision making; (2) *creative product*, or the degree to which a solution to a consumption problem is considered creative; (3) *creative person factors*, or different psychological facilitators of creativity (i.e., knowledge, motivation, innovativeness, and efficacy); and (4) *solution evaluation*, or the degree to which a consumer evaluates his or her solution to a consumption problem favourably. In line with previous literature, a conceptual model, as well as four propositions about these concepts and their relationships, was developed. To obtain measures of creative product, 245 participants responded to a scenario that asked what they would serve at a dinner party. Thought protocols describing participants' thinking during decision making were the basis for measures of creative cognitive processing. Psychological facilitators of creativity and solution evaluation were measured on established scales. Analyses were performed in SPSS and LISREL VII.

This dissertation contributes to consumer research by applying a creativity framework to understand consumer decision making. To the best of my knowledge, it is the first to explore consumer creativity in less constrained settings, and the results show high variability in terms of both creative cognitive processing and creativity in solutions. It has previously been proposed that creativity in solutions to consumption problems should be conceptualized as a three-dimensional construct, but this has not been tested empirically previously. This research contributes by demonstrating that such a conceptualization is valid and reliable. A creative product assessment scale was developed in a separate study. The scale contributes to consumer research by providing a tool for assessing creativity in solutions to consumption problems. This research adds to the literature by identifying relationships between important antecedents, such as knowledge, motivation, self-efficacy, and innovativeness, on creativity in a mundane, everyday problem-solving situation. Finally, creative cognitive processing and creative production have positive effect on participants' solution evaluation. This underscores the relevance for marketers to focus on consumers as creative problem solvers.

## Acknowledgements

Working on this dissertation has been a long but enjoyable journey. Creativity is a fascinating phenomenon, and the more I learn, the more I understand how much I do not understand—a perfect situation to be in at the beginning of a research career. The learning curve has been steep, and I owe thanks to several people for contributing in different ways.

I began my doctoral program the year I turned 40, an age at which one is no longer young, single, and free to spend day and night in front of the computer. My husband and our three children have provided a much needed balance in my life over these years. Thank you, Øystein, Frida, Kaia, and Vegard, for collaboration and love.

I am deeply grateful to my mother Reidun and my sister Kari-Anne for their support and for always being there for me and my family. Thanks also to my brother Knut Harald who always challenges me and helps me see things from different perspectives .

As a doctoral student, I asked Professor Sigurd Troye if he would be my advisor. I had known Sigurd since he was my advisor on my master's thesis, and I knew no one else would be able to provoke my thoughts and help me gain perspective as he would. I had planned to pursue research on consumer loyalty, but during my first meeting with Sigurd, he convinced me that it would be much more interesting and fun to do research on consumer creativity. I am deeply grateful for this piece of advice. Thank you, Sigurd, for sharing your thoughts and comments on my work and for always being supportive.

During my doctoral education, I have worked at Buskerud University College. One of the first people I met here was Professor Kåre Sandvik. I remember him asking me if I thought it was fun working at HiBu. My answer was yes, and after working with Kåre, it has become even more so because of his insight, enthusiasm and witty comments. As my advisor, his help and comments on my work have been very valuable and always greatly appreciated. Thank you, Kåre, for advice and encouragement.

I had a chance to spend one year abroad as part of my doctoral education. The year at University of Colorado was probably the best year of my life in terms of both professional development and personal experiences. I am deeply grateful to all the faculty and students I got to know during this year. Very special and heartfelt thanks to Professor Page Moreau for inviting me and for generously sharing thoughts on my work. Her creativity and productivity continue to impress and inspire me.

Completing this dissertation would have been a much harder challenge had it not been for accommodating working conditions. Thanks to Hans Anton Stubberud, dean at the School of



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I also wish to thank 12 expert judges for scoring 245 thought protocols or solution suggestions on a number of items. This was a big job, one I totally depended on to obtain measures of creativity. Thanks for giving time and effort to this task.

This dissertation would not have been possible without the music to keep my spirit high. Thanks to Jackson Browne for writing the songs everybody else wish they had written, to Jamie Cullum for creative combination of music concepts, and to David Howell Evans for innovative guitar playing.

Kongsberg in October 2010

Marit Gundersen Engeset



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## Chapter 1 Introduction

Traditionally, research on consumer behavior has viewed the consumer as a rational decision maker wanting to minimize the cognitive effort needed to reach a decision (Bettman et al., 2008). According to the literature, consumers tend to choose products on the basis of preconceived patterns. That is, when faced with a problem, people will typically search their memories for existing solutions, and if a satisfactory solution is accessible, they will likely choose it. This process is referred to as conceptual fluency, or the ease with which an alternative comes to mind. Marketing literature has established that the brand with the strongest conceptual flow is also the one that is best liked and most often chosen (Lee and Labroo, 2004). In creativity literature, this tendency is referred to as “following the path of least resistance”—when faced with a problem, people tend to use a top-down process and search for easily accessible solutions. This tendency to follow the path of least resistance has led marketers and researchers to view consumers as passive responders to marketing stimuli, and the majority of research in consumer behavior literature is based on the assumption that consumers automatically try to minimize the cognitive effort in decision making. Little research has focused on understanding consumers in situations in which they leave the path of least resistance and put more effort and engagement in the decision-making process and design of a solution.

Although traditional models of consumer decision making are powerful in terms of explaining variation in many situations consumers face, they do not account for many types of diversity and variety. According to different streams of research in consumer behavior, consumers do not always follow the least effortful avenue in their pursuit of goal attainment. For example, literature on variety seeking in consumer behavior suggests that as consumers gain experience, they are more likely to show preference for new alternatives (McAlister and Pessemier, 1982). This can be explained in part by internal cognitive processes that help people maintain an “optimum stimulation level”. If repeated choice results in boredom, cognitive activity will produce more input, and if stimulation is too high, for example, because of too much information or too many alternatives, cognitive activities will attempt to reduce or simplify input. Research shows that in some instances, consumers engage in varied behavior even if it means choosing the less preferred options (Ratner et al., 1999). Because the optimal stimulation level and the subjective experience of the choice situation vary from one person to another and from one choice occasion to another, variations in variety-seeking behavior can be attributed to both situational factors (e.g., number of alternatives in a product category), and individual factors (e.g., experience, optimal stimulation level).

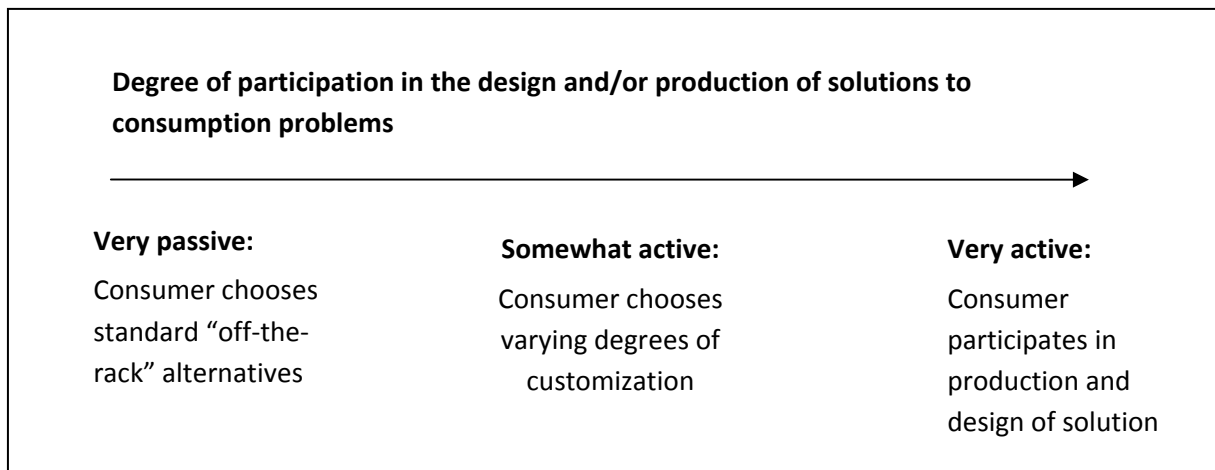
There are many situations in which consumers sometimes willingly and knowingly leave the path of least resistance even though satisfactory solutions are easily accessible. Consider, for example, the car enthusiast who spends time and effort designing his or her own car, the gourmet who enjoys shopping for ingredients and cooking, the collector who spends time and money on odd items. A growing body of literature now focusing on the consumer as a creative, active participator in the search, evaluation, design, and consumption of solutions to problems includes consumer creativity (Burroughs et al., 2008, Moreau and Dahl, 2005, Burroughs and Mick, 2004), prosumption and self-design (Dahl and Moreau, 2007, Moreau and Herd, 2010, Xie et al., 2008, Troye and Supphellen, 2010), and the emergent “service dominant” logic of marketing (Vargo and Lusch, 2004, Vargo and Lusch, 2008).

Literature viewing the consumer as a value creator can be divided into two broad groups: (1) literature focusing on active consumers and (2) literature focusing on creative consumers. The first group focuses on the consumer as an active contributor in the design and production of solutions to their consumption problems. This literature uses attitude theory and motivation theory as frameworks to understand consumer participation (Dahl and Moreau, 2007; Xie et al., 2008). The second group attempts to understand when and how consumers act creatively in consumption situations. This literature uses creativity theory as a framework to understand consumer decision making.

This chapter is organized as follows: Literature focusing on active consumers is presented and discussed in section 1.1, followed by a review of literature on consumer creativity in section 1.2. In section 1.3, the current research is positioned relative to existing literature, and organization of the dissertation is presented in section 1.4.

## **1.1 The active consumer**

In almost any decision situation, consumers can choose the level of effort and engagement they want to spend in designing and producing a solution. For example, when searching for a new sweater, a consumer can choose a standard off-the-rack model, go online and order a customized sweater, hire a tailor and have one custom made, or make the sweater him- or herself. Figure 1 places the degree of consumer involvement in the design of a solution on a continuum from “very passive” to “very active”.



*Figure 1: Continuum of participation in design and production of solutions to consumption problems*

The market for self-design products is rapidly growing, and marketers and researchers need to gain more insight into factors that can explain different aspects of consumers as creative individuals and active participators rather than passive responders. Literature on customization, prosumption, and self-design focuses on two aspects: (1) why people engage in the production and design of solutions to their consumption problems, and (2) how participation influences consumers’ evaluations of their self-designed/self-produced solutions.

### **1.1.1 Why do consumers engage in production and self-design?**

Researchers have raised the question of why consumers move from standard products towards alternatives that require more effort and participation. A self-designed solution has the potential to satisfy individual needs more fully, and literature suggest that closer preference fit is an important explanation for why customized products are preferred (Franke et al., 2009, Franke and Piller, 2004). However, recent research has demonstrated that superior fit cannot fully explain evaluations of self-designed products (Moreau and Herd, 2010, Franke et al., 2010). Two contributions focusing on explaining why consumers engage in self-design, creative acts, and self-production. First, Xie et al. (2008) use the theory of trying (Bagozzi and Warshaw, 1990) to explain the likelihood of consumers to choose the self-produced rather than off-the-rack solution. Second, Dahl and Moreau (2007) shed light on why consumers engage in creative activities and when such activities are most enjoyable.

Xie et al. (2008) examined factors influencing consumers’ intentions to engage in prosumption. Prosumption is an act in which consumers produce a product for their own consumption, in contrast with mere choice situations in which consumers choose off-the-rack, “ready-to-use” alternatives. Arguing that the subjective experiences created by consumers’ self-design go far “beyond mundane economical gains” (p. 112), Xie et al. viewed the act of prosumption as an active trying process—that is, a process in which consumers attempt to achieve goals by participating in the production of

solutions to their own consumption problems. Their research provides empirical support for a sequence of effects in which global values influence domain-specific interests, which in turn affect attitudes, self-efficacy, and ongoing behavior before shaping intentions to prosume. People are more likely to choose to engage in self-design if they have high relevant global values. These values include interpersonal values (e.g., emphasis on relationships with others), personal values (e.g., self-respect, accomplishment), and fun values (e.g., excitement, fun, enjoyment). Ultimately, intention to prosume increases with more positive values and attitudes, higher self-efficacy, and past behavior.

Dahl and Moreau (2007) focused on creative acts, such as cooking kits, paint-by-number kits, and so on, and examined (1) the basic motivations underlying the decision to engage in such activities and (2) when those activities were the most enjoyable. A qualitative study identified many reasons people undertake creative tasks, including competence, autonomy, learning, engagement and relaxation, self-identity, public sense of accomplishment, and community. Autonomy and competence were identified as the two most dominant motivations, and Dahl and Moreau conducted experiments demonstrating that when participants performed the creative acts with feelings of autonomy and competence, they reported higher levels of task enjoyment. Together, these contributions suggest that people engage in self-design and self-production because they enjoy the process itself (e.g., excitement and fun, engagement and relaxation) and because the creative act can help them achieve other important goals and values (e.g., sense of accomplishment, relationship with others).

### **1.1.2 How does participation affect evaluation?**

Closely tied to the question of when consumers choose to engage in creative acts is the question of what influences their evaluations of outcomes of prosumption and self-design. According to research on customization, willingness to pay, purchase intentions, and attitude towards the customized product increase when consumers have better insight into their own preferences, a better ability to express their preferences, and greater product involvement (Franke et al., 2009). These findings are in line with what might be expected when desire for superior fit (e.g., a closer fit between product attributes and preferences) influences choice of customized over standard products. However, superior fit alone does not fully explain consumers' preferences for self-design and co-production. Franke et al. (2010) identified what they called an "I designed it myself" effect in customization. Self-design led to greater feelings of accomplishment, which in turn increased willingness to pay. The outcome of the process moderated the effect; that is, the higher the preference fit, the greater was the effect of self-design on subjective value. The person's own perception of control during the self-design process also moderated the effect of self-design on

perceived value. This research shows that it is not only the outcome of the process (i.e., a product with closer preference fit) but also the process itself that generates additional value. When consumers contribute to the design of solutions to their consumption problems, their sense of accomplishment from the design process itself creates additional value to them.

In their study on self-designed products, Moreau and Herd (2010) demonstrated that comparisons with professional designers and the use of defensive versus non-defensive processing strategies influenced evaluations of self-designed products. Specifically, consumers engaging in non-defensive processing during comparison with the professional designer subsequently evaluated their own designs less favorably than the professional design. When consumers used defensive processing strategies during comparison to make salient the need to protect self-esteem, their evaluations of their own design was more favorable.

Moreau and Herd's (2010) results indicate that evaluations of self-design go beyond mere comparison of the quality of the outcome. This is also the conclusion in a study on the effects of co-production on evaluation of outcome, input products, and brand (Troye and Supphellen, 2010). In a series of three experiments, they found strong support for the notion that co-production leads to more positive evaluations of the outcome, regardless of the outcome's objective quality. Moreover, evaluations of the dinner mediated a positive evaluation of the ingredients used to prepare the meal. In turn, this also led to more positive evaluations of the brand. Taken together, these contributions indicate that by participating in self-design and co-production, consumers successfully add value to the products beyond what can be explained by closer preference fit or mere ownership effects.

## **1.2 The creative consumer**

While literature on the active consumer focuses on why consumers choose to engage in the creation of solutions, literature on the creative consumer focuses on how consumers use creative cognitive processes during decision making, as well as the factors that influence creative outcomes of consumer decision-making processes. Consistent with research on creativity in psychology, four relevant concepts and the relationships between them focus on creative consumption: (1) *creative processing*, or the cognitive processes that take place during decision making; (2) *creative product*, or the properties of the solution or outcome of decision-making processes; (3) *creative environment*, or the properties of the situation or environment in which the decision process takes place; and (4) *creative person*, or the characteristics of the problem solver.

Hirschman (1980) first addressed consumer creativity in a conceptual article on consumer creativity, innovativeness, and novelty seeking. She conceptualized consumer creativity as "the problem solving

capability possessed by the individual that may be applied toward solving consumption related problems” (p. 286). According to her conceptualization, consumer creativity is a combination of interconcept network density (i.e., number of linkages among concepts based on the perceived intercorrelation of their respective attribute sets) and a repertoire of consumption situations (i.e., scripts learned from experiences with consumption situations). Such knowledge helps people form an ability to produce novel mental content, and according to Hirschman (1983, p. 157), “problem solving—when viewed as a creative activity—is seen to consist of recombining knowledge to create new knowledge”. Hirschman (1983) operationalized creative thinking as divergent thinking—the generation of multiple answers to a given problem—and found that a positive relationship among creativity, intelligence, and ability activated consumption-relevant information (Hirschman, 1983).

Hirschman’s contributions belong mainly in the interface between creative processing and creative person; conversely, Burroughs and Mick (2004) focused on the creative product and how different situation and person factors influence consumers’ production of creative solutions to consumption problems. Their findings suggest that when faced with consumption problems, consumers with more internal locus of control, higher metaphoric thinking ability, and high situational involvement produce more creative solutions than consumers with more external locus of control, lower metaphoric thinking ability, and lower situational involvement. However, Burroughs and Mick’s design was experimental, in which participants were asked to come up with a solution to a problem involving scuffed shoes and no shoe polish. By setting time constraints to block the most obvious solutions (e.g., buy from supermarket, borrow from a neighbor), Burroughs and Mick forced participants to think of other and potentially more novel solutions to the problem. When time constraints were relaxed, the effects of situational involvement and locus of control on creativity were mitigated. This research demonstrates that both situation factors and person factors affect creative consumption. Burroughs and Mick also found that acting creatively enhances consumers’ feelings of accomplishment, satisfaction, pride, and confidence.

Moreau and Dahl (2005) focused on the creative process and hypothesized that when no constraints exist, people tend to follow the path of least resistance and suggest conventional, non-creative solutions. They posited that when constraints operate, people are forced to search for alternative solutions, triggering a creative thought process that, in turn, likely influences the novelty of the solution. In three experiments, they demonstrated that constraints led to more bottom-up thinking, an indicator of creative processing. Moreau and Dahl also distinguished between the novelty and the usefulness dimension of creative solutions. Traditionally, a solution is said to be creative if it is a novel and useful solution to a problem. In most research, judged usefulness and judged novelty are



summed to form one indicator of creativity. Moreau and Dahl found that creative processing positively influences the novelty dimension, but they found no effect on the usefulness dimension.

The aforementioned research contributes to an understanding of consumer creativity in several ways. First, Hirschman (1983) was mainly concerned with creative processing, linking creativity to knowledge and examining how existing knowledge can be used to generate multiple solutions and to understand and accept innovations. Her work is mainly conceptual. Second, Burroughs and Mick (2004) focused on the solution and explored how both situational and person factors affect the degree of creativity in the solution. Finally, Moreau and Dahl (2005) were concerned with the creative cognitive process, linking this to situational factors (constraints) and to the degree of creativity in the solution. Taken together, these contributions show that in constrained settings, consumers act creatively to search for solutions to their problems. Factors that facilitate creativity are related to both situation and person, and acting creatively enhances positive affect. Figure 2 summarizes this research according to its contributions to different aspects of the creativity concept.

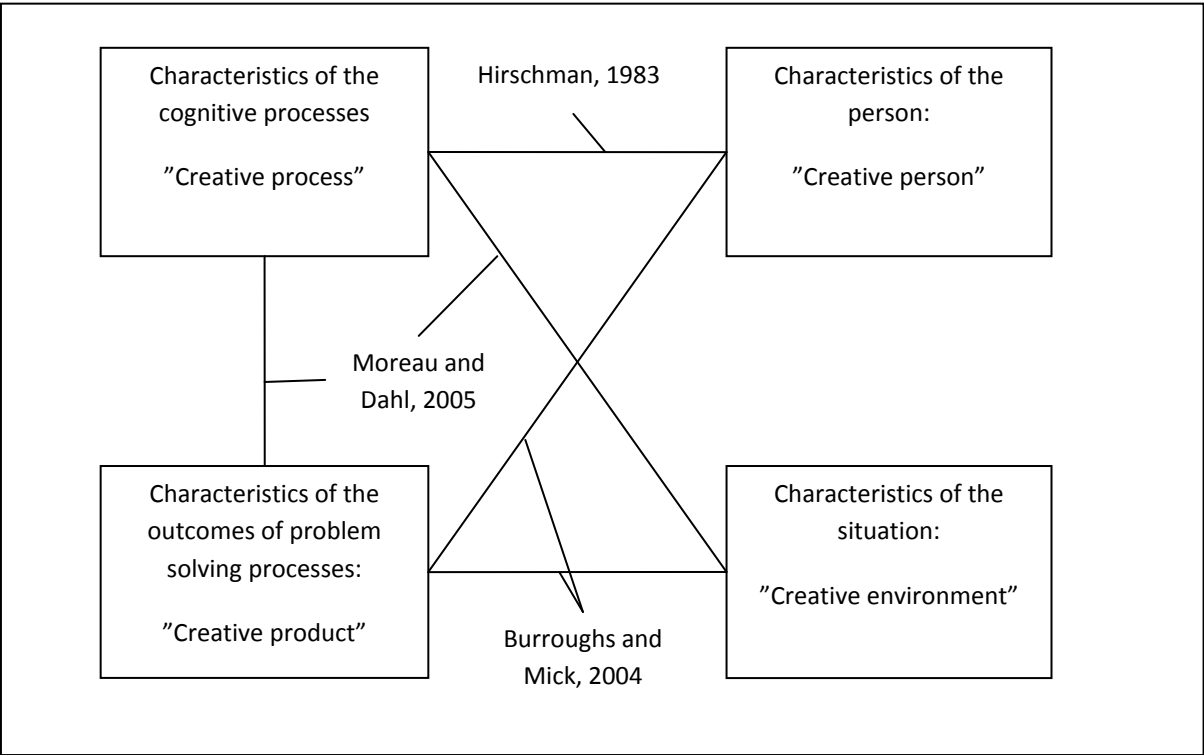


Figure 2: Summary of contributions from research on consumer creativity

**1.3 Positioning of the current research**

Much of the literature on consumer behavior focuses on the consumer as a rational decision maker, and the majority of research reduces the act of consumption to a simple decision of accepting or rejecting a standard, off-the-rack alternative. The growing body of literature on consumers as

creative and active contributors and the growing interest in the marketplace for more customized solutions and more customer participation represent a trend in which consumers are considered value creators rather than value destroyers. In the literature on creative and active consumers, researchers have focused on explaining when consumers choose to participate and how they evaluate solutions when they have contributed to the design and/or production of the decision processes. In addition, researchers have found that co-production and creativity add value beyond closer preference fit and mere ownership effects.

The current research focuses on consumer creativity and uses a framework based on creativity theory to understand consumer decision making. Although existing research has focused on creativity in constrained settings, the focus of this research is on how consumers act and think creatively in situations with fewer constraints. Burroughs et al. (2008, p. 2011) note that “creativity permeates the consumption realm. Yet, few attempts have been made to translate basic observations into theoretical treatise, and even fewer attempts have been made to empirically document the role of creativity in consumer behavior.” To unfold the creative processes occurring during unconstrained decision situations, the current research focuses on discovering relationships and building theory. Because this is a new area of research, this study begins as an exploration—that is, in the context of discovery. As opposed to the context of justification, in which the main focus is on testing predictions derived from well-established theories, the context of discovery is concerned with theory development (Troye, 1994). Consumers are asked whether they use creative processing during decision making even in situations in which existing alternatives are present (i.e., the situation does not force the consumer to be creative because some resources or alternatives are constrained or blocked). The study also explores antecedents to creative cognitive processing during decision making and investigates the effects of creative processing for characteristics of the solution to the consumption problem and for evaluation of this solution.

Figure 3 summarizes the prior literature reviewed and places the current research in this context:

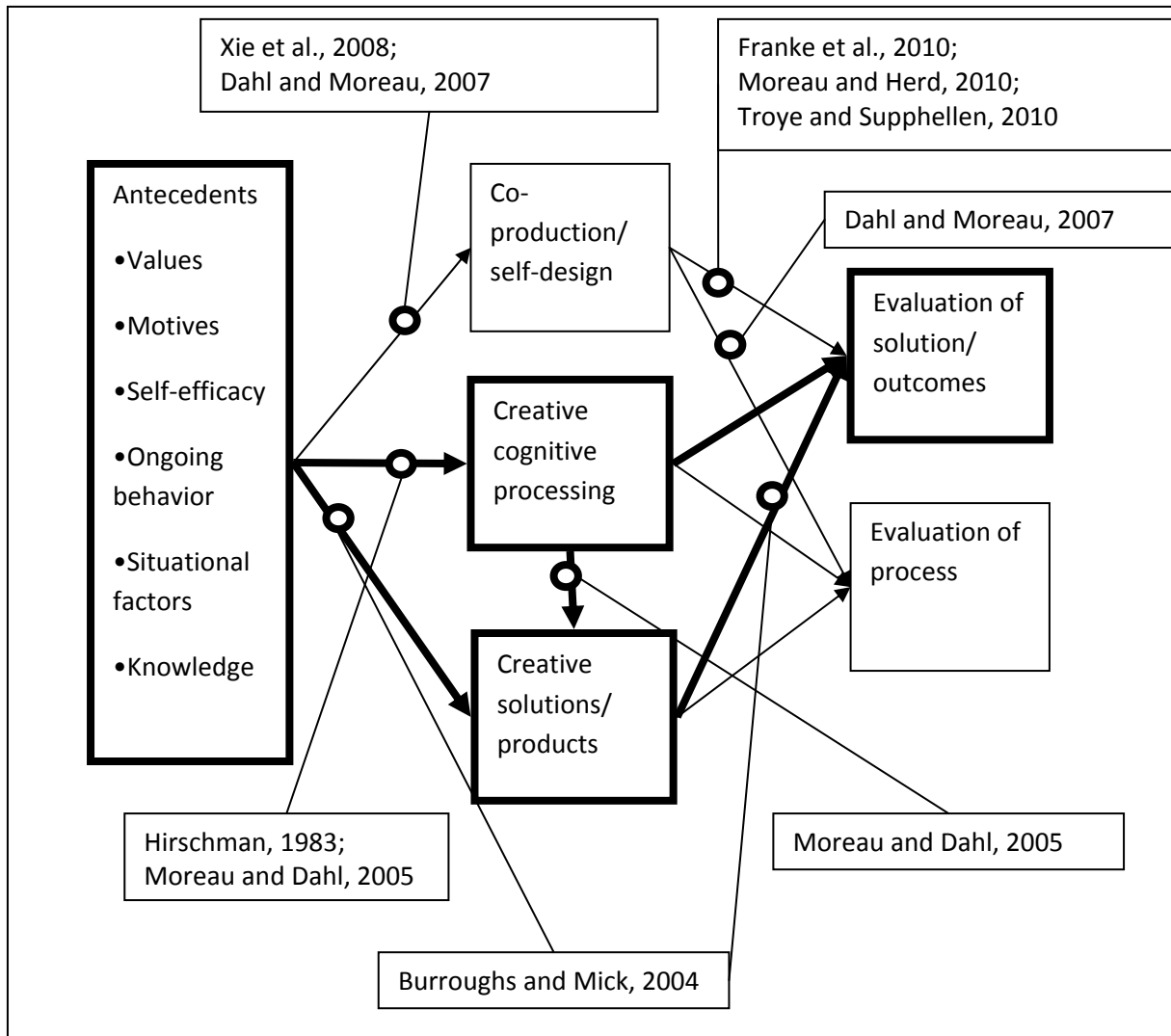


Figure 3: Positioning of this research relative to research on consumer co-creation and consumer creativity<sup>1</sup>

As Figure 3 illustrates, the current research focuses on the creativity perspective and examines the relationships between creative processing and creative solutions and their antecedents and consequences for evaluation of solution. Moreover, to test the assumption that consumers are willing to make extra effort during decision making even if easy solutions are available, the research setting is relatively unconstrained; that is, it allows participants to choose the first solution that comes to mind.

#### 1.4 Organization of the dissertation

Chapter 2 summarizes relevant creativity theory and discusses its relevance for consumption. This chapter also presents four propositions and a conceptual model that guide this research. Chapter 3

<sup>1</sup> The thick lines represent areas that are investigated in the current research.

develops the research models. Chapter 4 discusses the methodology, and Chapter 5 presents the development of measures for creative product assessment. Chapter 6 presents validation of the measurement models. Chapter 7 provides the structure models and hypothesis tests, followed by a general discussion and suggestions for future research in Chapter 8.

## **Chapter 2. Theoretical background**

This chapter aims to explain the theoretical foundations of a creativity perspective by discussing some of the literature on creativity in psychology. Early descriptions of creativity equated it with genius production and focused on identifying the source of such creativity. In 1950, Guilford brought creativity research into the modern age when he asserted the importance of creativity in his presidential address to the American Psychological Association. Since then, researchers in cognitive psychology have come to view creativity more as a product of normal cognitive processes (Ward et al., 1999). This chapter presents and discusses theory from creativity research.

This chapter is organized as follows: The creativity phenomenon is first discussed in section 2.1. Then, a discussion of each of the concepts relevant to creativity research is discussed in the following three sections. The literature is taken mainly from cognitive psychology, but some aspects of social psychology of creativity are also included. Finally, the conceptual model guiding this research and propositions are presented in section 2.5.

### **2.1 The creativity phenomenon**

Research on creativity has been motivated by observations of genius production, and researchers have been intrigued to identify the various personal characteristics and mental processes that precede the production of creative outcomes. This interest is due to the unquestionable importance of creative production to society. The word “creative” has been used to describe people’s abilities and traits (Amabile, 1983, Barron, 1969, Eysenck, 1997, Gough, 1979, Guilford, 1950, Guilford, 1964), people’s cognitive processes (Hirschman, 1983, Ward et al., 1999, Weisberg, 1993, Weisberg, 1986, Sternberg and Grigorenko, 2001, Runco and Chand, 1995, Moreau and Dahl, 2005, Hirschman, 1980), and product. A common word used to describe creativity under all foci is “novel”. For example, a product is creative if it is novel, a person is creative if he or she can produce novel mental content, and a cognitive process is creative if it involves novel combinations of existing knowledge. The difference between the three constructs pertains to what creativity refers to in each specific context. For creative product, creativity is a property of a solution in a problem-solving process. For the cognitive process, creativity is a property of the problem-solving process itself. For people and their personal characteristics and abilities, creativity is a property of the person solving the problem. A creative person, a creative cognitive process, and a creative product may work together in at least three ways.

First, creative products may be the extraordinary results of ordinary processes and abilities. If this is the case, creative productions occur by chance. The only thing worth investigating then is whether the subjective assessment of a result/product is creative or not. The underlying processes and abilities themselves are not important because they are assumed to be the same as “ordinary” abilities or processes. This view is neither realistic nor common.

Second, creative production may be considered a result of extraordinary processes and/or personal abilities. In such a dichotomy model, the question under scrutiny is whether these different abilities and/or processes can be explained. Creative people are identified by the creativity evident in their work, and their abilities and the processes that led to the creative outcome are believed to be unique rather than just more or less some process or ability preceding ordinary results. This view underlies case study (Gruber and Wallace, 1999) and historiometric approaches (Simonton, 1997) to the study of creativity. The people behind great creative work are studied for the purpose of identifying their unique characteristics and work processes. Although creativity in terms of differential eminence, such as the processes and/or abilities preceding work produced by people like Beethoven, Michelangelo, Tolstoy, Munch, and Descartes, may be unique, this does not mean that all kinds of creative production require extraordinary processes or abilities. On the contrary, both anecdotal and empirical evidence suggest that the cognitive processes and the abilities preceding creative production vary depending on the domain of work. Different creative processes have been identified for scientific creativity (Busse and Mansfield, 1980) and artistic creativity (Nemiro, 1997). A growing body of research suggests that several paths lead to creative production (Lubart, 1994) and the notion that creative production is a result of unique processes and abilities seems to be refuted, at least if creativity is believed to encompass solutions to mundane, everyday problems as well as extraordinary artistic and scientific production.

A third view of the relationship among person factors, processes, and production asserts that the degree of creative abilities and creative cognitive processes lies on a continuum, in which variations in subprocesses and/or combinations of different abilities and processes predict creative productions. The questions researchers ask are how different subprocesses and person factors work and interact in such ways to be called creative. This view opens avenues for investigating creative person factors, creative cognitive processing, and creative products as independent constructs. It follows that a single basic process may lead to different levels of creativity. This difference arises from variations in the subprocesses that occur. Under this view, no inherent differences exist between the processes leading to creative and non-creative outcomes; that is, the exact same sequence of thought can lead to varying levels of creativity. What is important is the quality of the

material and the subprocesses. This is consistent with Amabile's (1996) componential model of creative production. In this model, she proposes that different levels of creativity in outcome depend on task motivation, domain relevant skills, and creativity-relevant processes. These components may influence the quality of the creative process and, thus, the creativity of the outcome. For example, Amabile proposes that task motivation influences the problem identification and response generation phases while domain relevant skills influence the preparation and response validation phases. Other empirical findings suggest that differences in subprocesses, and not differences in the cognitive process itself, are better able to explain differences in creative production. According to empirical work, relatively ordinary cognitive processes lead to creative results (Weisberg, 1993, Weisberg, 1986) and to differences in the quality and quantity of problem finding (Getzels and Csikszentmihalyi, 1976). Furthermore, Goor and Sommerfeld (1975) found that creative people spend more time generating new information and hypotheses, working on these hypotheses, and applying self-reference or self-criticism. They also found differences regarding the sequence of activities. For example, following self-reference or self-criticism, the creative group tended to engage in generating new information or new hypotheses, while the less creative group took a moment of silence before continuing the work (Goor and Sommerfeld, 1975). Lubart (1994a) studied the role of idea evaluation during the creative process and found that relatively early –“autoevaluations” of work led to higher creativity. Thus, timing of evaluation had effect on creativity in outcome. More recently, it was found that external evaluation expectations assert differential effects on different parts of the creative process and on final product creativity (Yuan and Zhou, 2008). Finally, in the domain of consumer creativity, Moreau and Dahl (2005) found that time and resource constraints influenced the degree of creative processing, which in turn influenced novelty but not appropriateness of the outcome.

The current research builds on the assumption that creative cognitive processes, creative person factors, and creative product are three distinct but related constructs. The phenomena are studied in the context of consumption. The following example illustrates anecdotal evidence of such independence: Let creative cognitive processes be the combination of mental content in novel and appropriate ways, the creative person be factors that facilitate creative production, and creative product be novel and useful solutions to problems. Consider a mother who is hosting a birthday party for her young son. During the party, she learns that one of the guests is allergic to milk and that he cannot eat any of the food she has planned to serve. In this situation, she may combine her knowledge about different raw materials to come up with potential solutions. Creative person factors would include her pre-existing knowledge about different categories of food and ingredients

and how they could be combined. Another person factor would be her motivation to find a solution for that particular situation. These could be necessary, but not necessarily sufficient, antecedents of creative processing and creative production. Creative cognitive processing would be the way the mother used her pre-existing knowledge. Did she search in all her categories of relevant knowledge or only a few? Did she think of many possible combinations, or did she settle for the first one that came to mind that seemed appropriate? Did she search for external information, or did she use only her existing knowledge? A broader search in more categories would be indicative of more creative processing. Creative product would be the solution to her problem. What did she serve? How did the guests judge the food in terms of novelty and appropriateness? Say the mother baked a delicious and decorative cake that was safe to eat for the allergic child and that her solution was to replace milk with apple juice. The other parents might consider her solution creative and ask how she came up with it. The mother could answer that the recipe had been in her family for decades and that her great grandmother had gotten the idea when she baked a wedding cake for her daughter after their milking cow had died. Or she could answer that she knows quite a bit about baking, and because she really enjoys experimenting with new ingredients, she spent a lot of time thinking about how she could solve the problem so that everyone was satisfied. The first reply indicates that her grandmother had been the creative one, and the second reply indicates she herself had engaged in creative cognitive processing while planning the solution to the problem. Regardless of the answer, the cake is the same, and it is judged as creative by the other parents.

In this research, creative cognition, creative person factors, and creative product are viewed as three concepts, each of which can be made more likely to occur, but is not determined, by the existence of any of the others. Creative and non-creative processes and person factors are placed on continuums rather than conceptualized as dichotomies.

## **2.2 The creative product**

The observation of creative products triggers theorizing about creativity. Indeed, analysis of the creative product is considered the starting point of all studies on creativity (Burroughs et al., 2008). Creative products are original or unique outcomes. These may be artistic outcomes, such as a painting or a symphony, scientific outcomes, such as a theory, or solutions to more mundane problems, such as outcomes of consumer decision processes. The literature has defined creative product more by its empirical than its nominal meaning. That is, when discussing the creative product, researchers refer to measurement issues and examine the dimensions that can be used to describe creativity in the outcome. A product is defined as creative according to the extent to which appropriate observers agree that it is creative (Amabile, 1982). Although this is clearly a tautology, it



provides a useful starting point for analysis of creativity. Because the observation of creative outcomes triggers theorizing in this field, understanding what dimensions can be used to reach consensus regarding creativity in an outcome is necessary for understanding antecedents and consequences of creative production.

The most common dimensions of creativity are originality and usefulness (Amabile, 1996, Besemer and O'Quin, 1986, Burroughs et al., 2008, Mumford and Gustafson, 1988, Runco and Charles, 1993). Originality is usually gauged in terms of the extent to which a particular outcome is novel or original compared with the more conventional outcomes in a given situation. Being novel by being bizarre is not usually thought of as creative, and therefore outcomes are also judged on a usefulness dimension. That is, to be creative, an outcome must be an appropriate solution to the problem at hand. Thus, a creative outcome must be both useful and novel, but novel and/or useful outcomes are not necessarily creative. Recently, Burroughs et al. (2008) argued that aesthetics should be included to assess creativity of solutions to consumption problem. Aesthetics refer to the beauty, elegance, or attractiveness of a solution. As with usefulness and novelty, a solution may be aesthetic without being creative, but it is suggested that it cannot be creative without being aesthetic.

### **2.3 The creative process**

A decade of creativity research has produced a variety of models of the creative process. Most of these models are variations of the original four-step model of the creative process (Wallace, 1926). This model proposes that a creative process includes preparation, incubation, illumination, and verification. Preparation is the preliminary analysis of setting up and understanding the problem. In the next phase, incubation occurs as the person more or less consciously works to find a solution to the problem. Illumination occurs when a promising idea breaks through to conscious awareness. Finally, verification involves evaluation, refinement, and development of the idea. Some early empirical work supported this model (Patrick, 1937), but it was later criticized for being too simplistic (Guilford, 1950). Despite the criticism, later models of the creative process resemble this original work. In her work on the social psychology of creativity, Amabile (1983) incorporated a version of this model. She described a process consisting of (1) problem/task identification; (2) preparation, or the gathering and reactivating of relevant information and resources; (3) response generation, and (4) response validation and communication. In terms of the outcome of the final stage, a person may either be satisfied with the solution or return to earlier steps for further work (Amabile, 1996). Yet another model of creative cognitive processing is Runco and Chand's two-tier model of creative thinking (Runco and Chand, 1995). In this model, they incorporate the problem-solving process itself

(problem finding, ideation, and evaluation) in the primary tier and knowledge and motivation in the second tier.

However, the creative process models all depict stages in the problem-solving process that could also be representative of less creative processing. Consider a situation in which a woman needs to choose a pair of hiking shoes. The problem representation could be that the old shoes are out of date or no longer usable, or perhaps the woman does not own a pair and needs shoes to hike with friends. She might search her memory for alternatives, and a brand of shoes her friend owns might immediately come to mind. She thinks that because her friend owns this brand, it must be good, and she decides to buy that brand. This cognitive process contains all the steps the three models of creative thinking suggest, but is it creative? Consider another woman in the same situation. She thinks about different brands of hiking shoes that she has heard about from friends and advertising. She also searches her mind for other types of alternatives. Hiking shoes are expensive. Should she consider sneakers or sandals? Perhaps she can go barefoot. Instead of buying, perhaps she can borrow a pair or buy a used pair. She searches her mind, evaluates whatever comes up, returns to her search when the solution is not satisfactory, and come up with different alternatives. She might end up with the exact same solution as the first person, but in comparison, she shows evidence of more creative processing (searching in more categories of knowledge, combining mental content in novel ways). There are no real differences in terms of stages of problem solving, and there are no real differences in terms of solutions to the problem. The difference lies in the subprocesses and the way each woman thinks at each stage. Because creative processing entails novel combinations of mental content, it is the subprocesses at each stage that characterize a process as either creative or not. According to Ward et al. (1999), human cognition has the capacity to generate solutions beyond discrete stored experiences and knowledge, and this generativity applies not only to artistic, scientific, and technological advancement but also to everyday thought. Generativity may be thought of as creative processing, and the degree to which a person in a particular problem-solving situation uses generative processing (i.e., search for and combine solutions from different categories of knowledge) determines the degree of creative processing. It is the quality of the subprocesses and not the problem-solving stages themselves that makes the process more or less creative. The nature of this generative thinking is well documented in the Geneplore model (Ward et al., 1999). This model suggests that when faced with a problem, a person will first generate a set of candidate ideas and then extensively explore those ideas. The initial ideas may be described as preinventive in the sense that they are not complete plans for a solution but that they hold some promise of yielding outcomes that may be creative. The model assumes that people alternate between generation and exploration

until a satisfactory solution is constructed. The Geneptore “recognizes that every day and extraordinary forms of creativity are linked by a common set of processes, creative and non-creative thinking can also be seen as lying on a continuum. The extent to which generative, exploratory processes and preinventive structures are involved and give rise to emergent creatures merely increases the likelihood that a creative idea or product will result” (Ward et al., 1999, p. 193).

The alternative to “creative” processing is “normative” processing, and the distinction between the two lies not in the stages or the process itself but rather in the number and variety of elements involved in the search. Heading towards the most obvious solution without considering any other alternatives or combinations of alternatives would be normative processing—a type of processing that typically explains the immediate choice of a dominant alternative in a consumption choice situation. This response, referred to as following the path of least resistance (Ward et al., 1999), is a top-down approach in which the default solution to a task is the one that most easily comes to mind. Conversely, bottom-up thinking captures the extent to which the decision maker leaves the path of least resistance (i.e., the first satisfactory solution that comes to mind) and focuses on searching for attributes and alternatives (Moreau and Dahl, 2005). Observations of a specific kind and the uniqueness of the considerations reflect both breadth and depth in use of categories of knowledge. This is called “conceptual combination” and reflects the final stages in the creative process (exploration of ideas to fit problem).

## **2.4 The creative person: Psychological facilitators of creativity**

Psychological facilitators of creativity are person factors that may be conducive to creativity. Several such factors may be important to creativity in consumption situations. From creativity literature, the two most important factors are knowledge and motivation. These are also included here. In addition, consumer innovativeness has been linked to consumer creativity (Hirschman, 1980), and self-efficacy has been linked to consumers’ propensity to prosume. (Xie et al., 2008).

### **2.4.1 Knowledge**

Weisberg (1999, p. 226) notes that “knowledge may provide the basic elements, the building blocks out of which are constructed new ideas, but in order for these building block to be available, the mortar holding the old ideas together must not be too strong.” Two dominant views exist regarding the link between knowledge and creativity. First, the tension view posits that though some knowledge is necessary for creative production in a field, too much knowledge is detrimental to creativity because it makes it difficult for the person to go beyond what is already known. Thus, according to this view, the relationship between knowledge and creativity is assumed to follow an

inverted U-shaped form, with maximum creativity at the middle ranges of knowledge. Second, the foundation view posits that the relationship between knowledge and creativity is positive. There is empirical support for both views, and Weisberg notes that research supporting the tension view focuses on creativity in terms of “deep changes”, in which substantial modification of how the participants think is necessary to generate a satisfactory solution. He argues that in real-world situations, deep changes that make experience detrimental are not common. To produce something creative, there must be a starting point, and in most situations, that starting point is existing knowledge and experience.

In a study on knowledge accessibility and creativity, Rietzschel et al. (2007) found that priming creators with categories of knowledge enhanced the number and originality of ideas but did not affect the feasibility of ideas. These findings support the foundation view that posits a linear relationship between knowledge and creativity. The findings also suggest that use of knowledge affects the different dimensions of creativity differently—that is, originality is enhanced, but usefulness is not.

In consumer behavior literature, arguments supporting the notion of a linear relationship between creativity and knowledge also exist. Hirschman (1980) claims that consumer creativity results from the density of the product-relevant interconcept network and the repertoire of consumption situations mentally retained. These factors can be construed as cognitive pathways for solving a consumption problem. A larger number of potential pathways lead to a larger number of alternatives for producing something new. Knowledgeable consumers are more selective in encoding new information (Alba and Hutchinson, 1987). Thus, consumers who are experts may be more creative because of their ability to determine which information is more useful.

## **2.4.2 Motivation**

Research suggest that motivation is perhaps the most important factor influencing creativity (Collins and Amabile, 1999). Activities undertaken as a result of interest, passion, or joy often result in creative outcomes, while activities driven by some external motivation often result in repeated choice or ordinary performance. In a review of motivation and creativity, Collins and Amabile (1999, p. 297) stress that though “creativity can arise from a complex interplay of motivational forces, motivation that stems from the individual’s personal involvement ... is crucial for high levels of creativity in any domain”. Amabile (1996) further distinguishes between intrinsic and extrinsic motivation. According to her “intrinsic motivation hypothesis of creativity”, intrinsic motivation is conducive to creativity, while extrinsic motivation is detrimental. The rationale is that while under

the influence of intrinsic motivation, people focus on the task itself; conversely, when under the influence of extrinsic motivation, people focus on the results of the task. Through a series of empirical research, Amabile et al. (1994) documented a positive relationship between intrinsic motivation and creativity and a negative or non-significant relationship between extrinsic motivation and creativity.

In line with Amabile's (1996) hypotheses, research on consumer creativity has found that internal locus of control has a more positive influence on creativity than external locus of control (Burroughs and Mick, 2004). Similar to Amabile's conceptualization, they view motivation as an enduring psychological disposition. Motivation to engage in a task may vary not only with this type of extrinsic versus intrinsic motivational disposition but also with the ongoing interest in a task or domain. Motivation to perform creative tasks is likely to consist of two elements: the baseline attitude, or the overall, enduring motivation to perform tasks in the given domain, and the motivation to perform in a given instance. A person's baseline attitude towards a task is formed when he or she performs a cognitive assessment of a task and the task aligns with existing preferences and interests. In addition to this baseline attitude, the motivation to undertake the task in a given instance largely depends on external and environmental factors. This implies great variability in the degree of any type of creativity depending on the consumer's interests and preferences. Consider the purchase of a car. An interested and dedicated consumer will enjoy searching for, testing, discussing, and contributing to the design of the car. The extensive information search will contribute to knowledge and may result in an original solution. In contrast, an uninterested car buyer may choose a few important attributes, such as price, comfort, and safety, and make a decision based on the performance on these attributes, resulting in a solution that is high on usefulness but not necessarily very original.

Consumer behavior literature also offers motivational explanations about why consumers engage in problem-solving activities when habitual choice or simply following the crowd would be much easier and require much less resources (Bearden et al., 1989, Burns, 2007, Deighton, 1992, McAlister and Pessemier, 1982, Miller et al., 1993, Rong-An et al., 2005). Consumer creativity requires more effort and engagement than choosing a mainstream solution. Literature on consumer creativity has found that factors such as high situational involvement and internal locus of control influence creativity in solution, supporting the notion of a positive link between creativity and motivation.

### **2.4.3 Self-efficacy**

Self-efficacy has been conceptualized as individuals' confidence in their ability to organize and execute a given course of action to solve a problem or accomplish a task (Bandura, 1997). Xie et al.

(2008) found that self-efficacy has a positive influence on intention to prosume. To the best of my knowledge, no research to date has investigated the relationship between self-efficacy and creativity. Self-efficacy theory focuses on expectancies for success and distinguishes between outcome expectations, or beliefs that certain behaviors will lead to certain outcomes, and efficacy expectations, or beliefs that one is able to perform the behaviors necessary to produce the outcome. In a situation in which a consumer faces a problem, several courses of action are available. The judged creativity of the outcome is likely to depend on which course of action the consumer takes. These courses span from simply choosing the same product and acquiring it the same way he or she did the last time (habitual behavior), to browsing information channels and following advice from commercial or non-commercial sources, to trying a solution previously not tested and contributing to the creation of a solution to the problem in a prosumption process. Research shows that when skill is held constant, efficacy belief is an important contributor to performance accomplishment. This is explained in part by observations that people with high levels of self-efficacy show greater problem-solving skills than peers with low levels of self-efficacy (Bandura, 1997, Bandura and Jourden, 1991). People with low levels of self-efficacy are likely to make less use of their problem-solving capabilities and may follow the conceptual flow and settle for the first satisfactory solution that comes to mind. Therefore, efficacy expectations should influence the problem-solving strategy and, thus, the judged creativity of the solution.

#### **2.4.4 Innovativeness**

Consumer researchers have long been interested in innovativeness because of its important role in understanding the diffusion and adoption of innovations (Rogers, 1995). Consumer innovativeness is often referred to as consumers' underlying propensity to adopt new products (Im et al., 2007). Innate consumer innovativeness refers to a personality continuum ranging from extremely adaptive to extremely innovative. Adapters are conforming and methodical, and innovators are typically non-conforming and risk seeking. This innate consumer innovativeness is a generalized predisposition towards innovations across product classes. Such innovativeness has been equated with consumers' inherent desire to seek out the novel and creative (Bagozzi and Foxall, 1996). Important dimensions of innovativeness are novelty seeking (Hirschman, 1980), risk taking (Rogers, 1995), and variety seeking (McAlister and Pessemier). If innovative consumers are more likely to seek out and adopt new products, it is also likely that this trait will encourage them to take the time to search for original solutions to consumption problems.

## 2.5 Conceptual model and propositions

This section integrates the creativity theory to form a structure of the potential relationships between the different dimensions important to understanding consumer creativity.

Creativity researchers have operationalized creative product as a multidimensional construct consisting of originality, usefulness, and other relevant variables (e.g., aesthetic, elegance, beauty). Typically, measures of each dimension are summed to form one indicator of quality. However, this approach may be problematic for several reasons. First, it makes it impossible to distinguish between different types of creativity for solutions at middle levels of creativity—for example, a solution that is highly original but not very useful will have the same score as a solution that is very useful but not original. Second, prior literature suggests that different ability factors may have a differential influence on the different aspects of creativity. For example, creative processing affects the originality but not the usefulness of the outcome (Rietzschel et al., 2007, Rietzschel et al., 2006, Moreau and Dahl, 2005). Furthermore, although motivation may enhance originality, it may have a negative effect on usefulness. Therefore, this research operationalizes creative product as a three-dimensional construct, including one originality dimension, one usefulness dimension, and one aesthetics dimension.

The creative person factors are called “psychological facilitators of creativity” and are conceptualized as a four-dimensional construct that includes one knowledge dimension, one motivation dimension, one efficacy dimension, and one innovativeness dimension.

Finally, creative processing literature suggest that creative processing consist of both the use of existing knowledge per se and the ability to move away from the path of least resistance and use more bottom-up thinking. Consumer behavior literature has conceptualized creative processing as bottom-up thinking, a dimension that reflects the idea generation phase of the creative processing. Literature on creative cognition suggests that conceptual combination—that is, the tendency to combine different categories of knowledge—is also a characteristic of creative processing. This tendency may be more indicative of the final stages in the creative process, the idea exploration phase. Thus, two dimensions of creative processing are proposed: conceptual combination and bottom-up thinking.

Research suggests that psychological facilitators of creativity influence both creative processing and creative outcome and that creative processing also has an independent influence on creative outcome. Furthermore, because psychological facilitators of creativity are believed to be necessary, but not sufficient, conditions for creativity in outcome, creative processing is likely to partially

mediate the effects of psychological facilitators of creativity on creative outcomes. Finally, according to the review of literature on the active and creative consumer in Chapter 1, consumers evaluate creative and self-designed products more positively and enjoy engaging in creative processes (Burroughs and Mick, 2004; Troye and Supphellen, 2010). Therefore, it is likely that consumers evaluate more creative solutions more favourably and that they also associate more creative processing with more positive evaluations.

Figure 4 illustrates the concepts to be investigated and the proposed relationships between them.



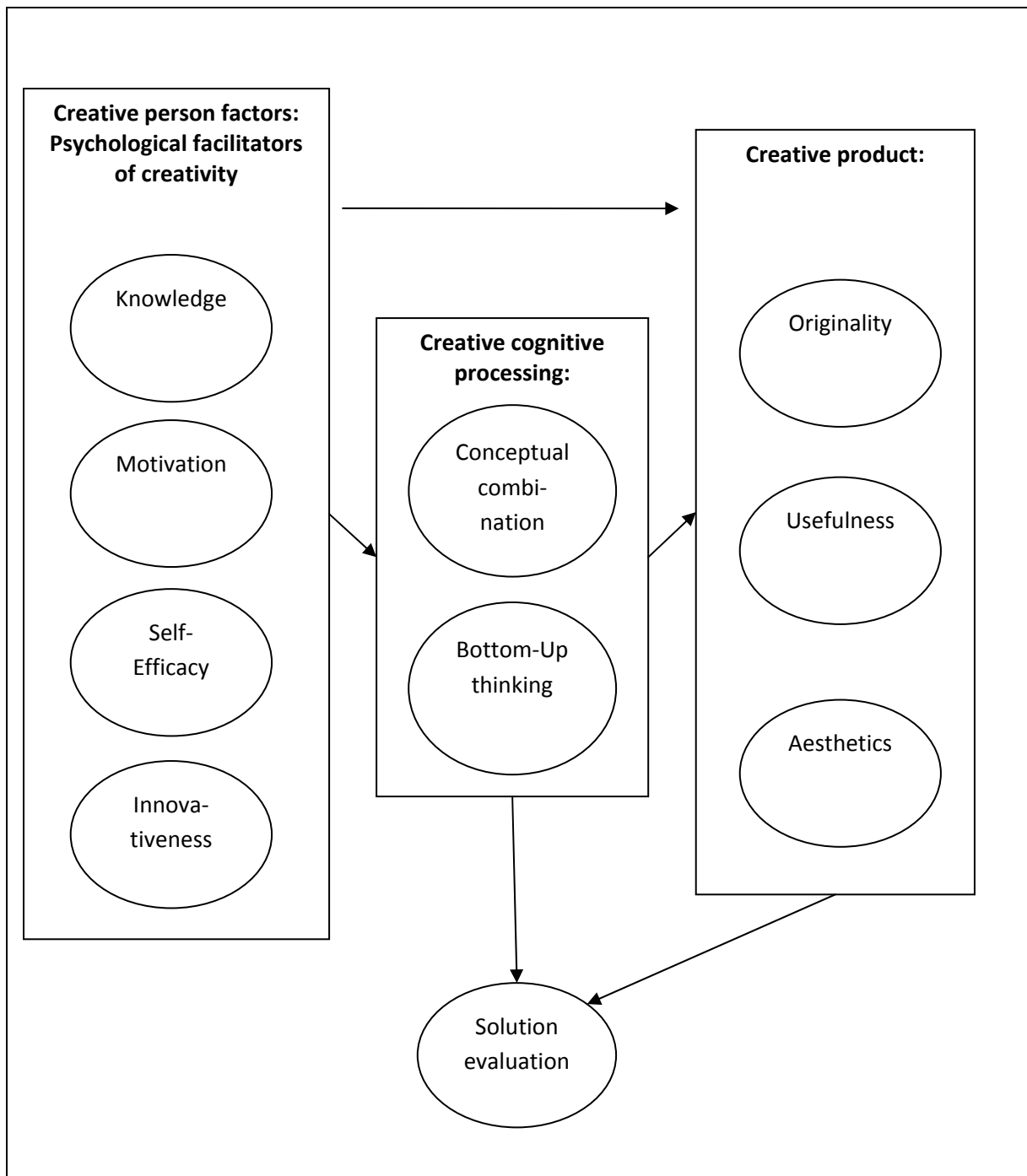


Figure 4: A conceptual model of consumer creativity

By testing the relationships proposed in Figure 4, the following propositions about creative decision making in the realm of consumption are discussed:

1. The three constructs psychological facilitators of creativity, creative cognitive processing, and creative product are constructs that are related to but not dependent on one another.
2. A richer understanding of the antecedents to creativity in solutions to consumption problems can be gained by investigating creative product as a multidimensional construct. In the

context of consumption, these dimensions are best described as originality, usefulness, and aesthetics dimensions.

3. Psychological facilitators of creativity influence both creative cognitive processing and creative product, and creative cognitive processing influences psychological facilitators of creativity.
4. Creative cognitive processing during decision making and the level of creativity in solution positively influence consumers' evaluations of the solution.

## Chapter 3 Research models

This research aims to gain a deeper understanding of consumer decision making that does not follow the path of least resistance, that is, situations in which, despite the availability of accessible, easy solutions, consumers choose to perform a broader, more creative search of alternatives. The literature review concluded with a conceptual model that proposed relationships among four concepts: psychological facilitators of creativity, creative cognitive processing, creative product, and solution evaluation. This chapter develops research models on the basis of creativity theory discussed in Chapters 1 and 2. No specific hypotheses are formulated; instead, expected relationships are modeled, and these models are then tested.

Creativity theory suggests that for people to leave the path of least resistance, some psychological facilitators are necessary. In the current research, knowledge, motivation, self-efficacy, and innovativeness are considered facilitators of creative processing. Creative processing is conceptualized as two dimensional, comprising conceptual combination and bottom-up thinking. Both creative processing and psychological facilitators of creativity are likely to influence creative product. Creative product has traditionally been treated as a formative construct and operationalized as the sum of scores on originality, usefulness, and aesthetics. However, creative product may be better conceptualized as a three-dimensional construct. Therefore, two sets of models are proposed for identifying the effects on creative product—one in which creative product is conceptualized as a unidimensional formative construct, and one in which it is conceptualized as a three-dimensional reflective construct. Finally, theory suggests that there is a positive relationship between creative production and evaluation of solution, and therefore this research includes measures of evaluation. Table 1 summarizes the constructs in the study:

|  |
|--|
| <b>Constructs and dimensions</b>   |
| <b>Psychological facilitators of creativity</b> <ul style="list-style-type: none"> <li>- Knowledge</li> <li>- Motivation</li> <li>- Self-efficacy</li> <li>- Innovativeness</li> </ul> |
| <b>Creative cognitive processing</b> <ul style="list-style-type: none"> <li>- Conceptual combination</li> <li>- Bottom Up Thinking</li> </ul>  |
| <b>Creative product</b> <ul style="list-style-type: none"> <li>- Originality</li> <li>- Usefulness</li> <li>- Aesthetics</li> </ul>  |
| <b>Solution evaluation</b>   |

*Table 1: Constructs included in the study*

This chapter is organized as follows: The research setting is first presented in section 3.1. Then, research models are developed and presented in section 3.2.

### **3.1 Research setting**

From the literature review, current research on consumer creativity is limited in understanding the factors that influence consumer creativity in situations in which conventional solutions are unavailable. This research aims to explore consumer creativity in less constrained and more realistic decision situations. In a decision situation, consumers may choose between varying degrees of participation in the design and production of a solution. The assumption is that consumers may be more or less creative regardless of their level of participation. The research setting was chosen to accommodate two requirements related to these issues. First, the setting needed to be a relatively familiar, unconstrained situation to address the question of how people are creative in less constrained situations. Second, it needed to be an empirical setting in which most people are aware of options ranging from a very low to a very high degree of involvement in design and production of a solution. Consequently, the empirical setting chosen in this research was a situation in which participants needed to come up with a suggestion of what they would serve friends who came over for dinner, a consumption problem anticipated to be relative familiar to most people.

### **3.2 Research Models**

In this section, research models are developed. Each model represents different aspects of the overall relationships presented in Figure 4. Section 3.2.1 develops propositions about the relationships between psychological facilitators of creativity and creative cognitive processing. In

section 3.2.1, relationships between psychological facilitators of creativity and creative product are proposed. In section 3.2.3, relationships between creative cognitive processing and creative product are proposed. Creative cognitive processing is proposed to partially mediate the effect of psychological facilitators of creativity on creative product. This model along with two rival models is presented in section 3.2.4. Finally, the effects of creative cognitive processing and creative product on solution evaluation are proposed in section 3.2.5.

### **3.2.1 Relationships between psychological facilitators of creativity and creative cognitive processing**

First, prior research has concluded that there is a strong link between knowledge and creativity (Weisberg, 1993, Rietzschel et al., 2007, Rietzschel et al., 2006, Hirschman, 1980). A consumer's knowledge is the information and performance scripts stored in memory, and during decision making, he or she may conduct a broad and thorough search of knowledge stored in memory or settle for the solution that most easily comes to mind. Because there must be some knowledge to combine and search for creative processing to occur, there is likely to be a positive influence of knowledge on both creative processing dimensions.

Motivation is a second potential facilitator of creativity. Psychological studies of creativity (Amabile, 1996, Amabile et al., 1994, Amabile, 1982a), research on consumer creativity (Burroughs and Mick, 2004), and literature on consumer behavior (Burns 2007, Deighton, 1992, McAllister and Pessemier, 1982) have all demonstrated that motivation can serve as explanations for creative production and for why consumers leave the path of least resistance. Creative processing requires more effort than following the path of least resistance. Therefore, less motivated people should follow the conceptual flow and stop searching their memories for alternatives as soon as a satisfactory solution comes to mind. Thus, positive relationships between motivation and the two cognitive processing dimensions are expected.

Self-efficacy is a third potential facilitator of creative processing. Xie et al. (2008) found that self-efficacy positively influences intention to prosume. Self-efficacy is conceptualized as a person's confidence in his or her ability to organize and execute a given course of action to solve a problem or accomplish a task (Bandura, 1997). As mentioned previously, research shows that efficacy belief is an important contributor to performance accomplishment. This is explained in part by observations that people with high levels of self-efficacy show greater problem solving skills than peers with a lower sense of self-efficacy (Bandura and Jourdan 1991). People with low levels of self-efficacy are likely to make less use of their problem-solving capabilities and thus may settle for the first satisfactory solution that comes to mind. Thus, self-efficacy is likely to have a positive influence on creative processing.

The fourth potential facilitator of creativity is innovativeness. Innovativeness is conceptualized herein as a continuum ranging from extremely innovative to extremely adaptive. According to Bagozzi and Foxall (1996), innovators have an inherent desire to seek out the novel and creative. Therefore, it is likely that innovators will

not only accept new products and choose original solutions but also will take the time to engage in creative cognitive processing to identify potentially original solutions to their problems. Thus, a positive link between innovativeness and creative cognitive processing is expected. Figure 5 presents these relationships.

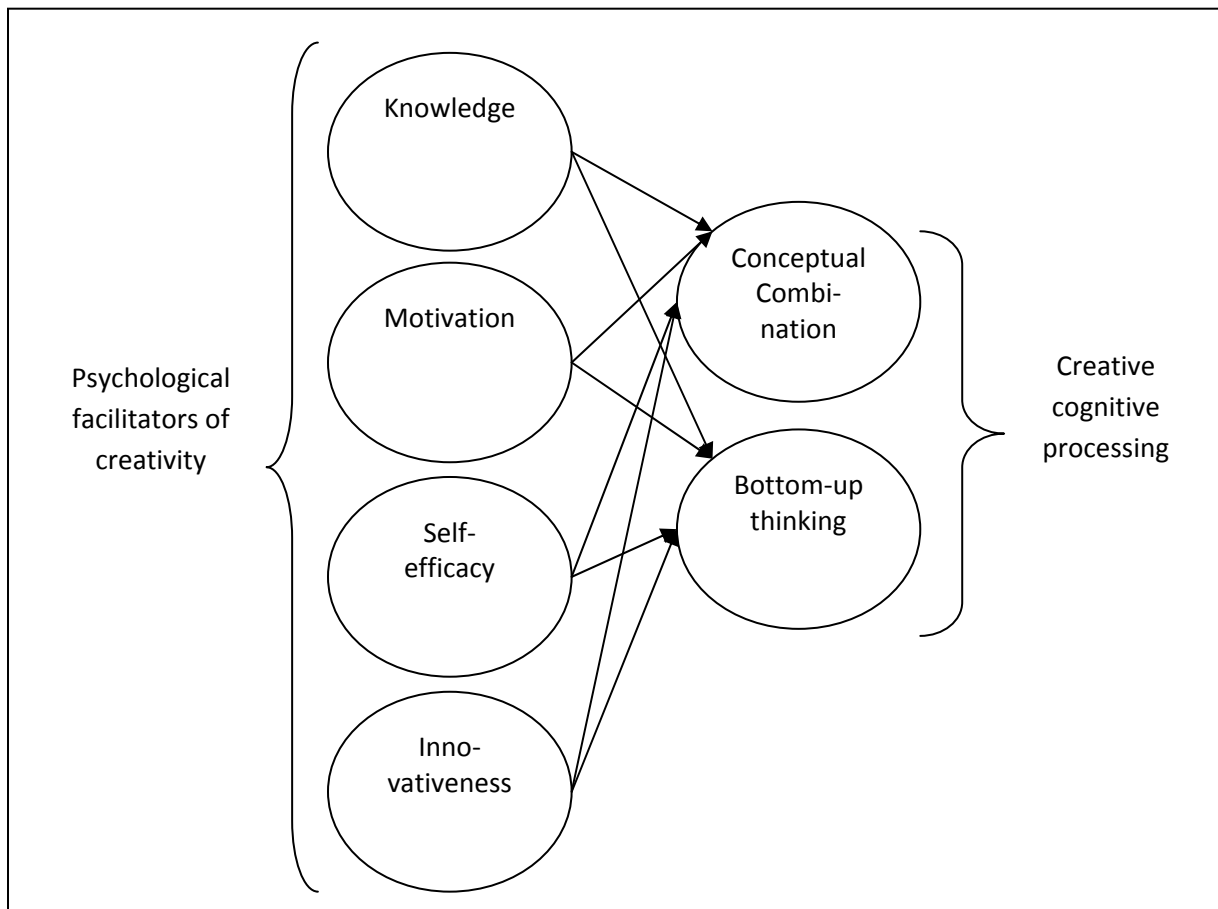


Figure 5: Model 1: Expected relationships between psychological facilitators of creativity and creative processing<sup>2</sup>

In addition to the direct effects from each of the creative facilitators to creative processing, potential interaction effects should be investigated. As discussed in Chapter 2, creativity researchers have long debated the nature and form of the relationship between knowledge and creativity. An explanation to the inconsistent results in previous research may be that knowledge is a necessary, but not sufficient, condition for creative cognition. Highly knowledgeable people with low motivation or interest and/or low innovativeness are likely to follow the conceptual flow and settle for the first solution that comes to mind rather than engage in creative cognitive processing. Thus, it is proposed that high levels of knowledge will have an even stronger influence on the two creative processing dimensions when motivation or innovativeness is also high. Figure 6 illustrates the

<sup>2</sup> All paths are expected to be positive.

proposed relationships.

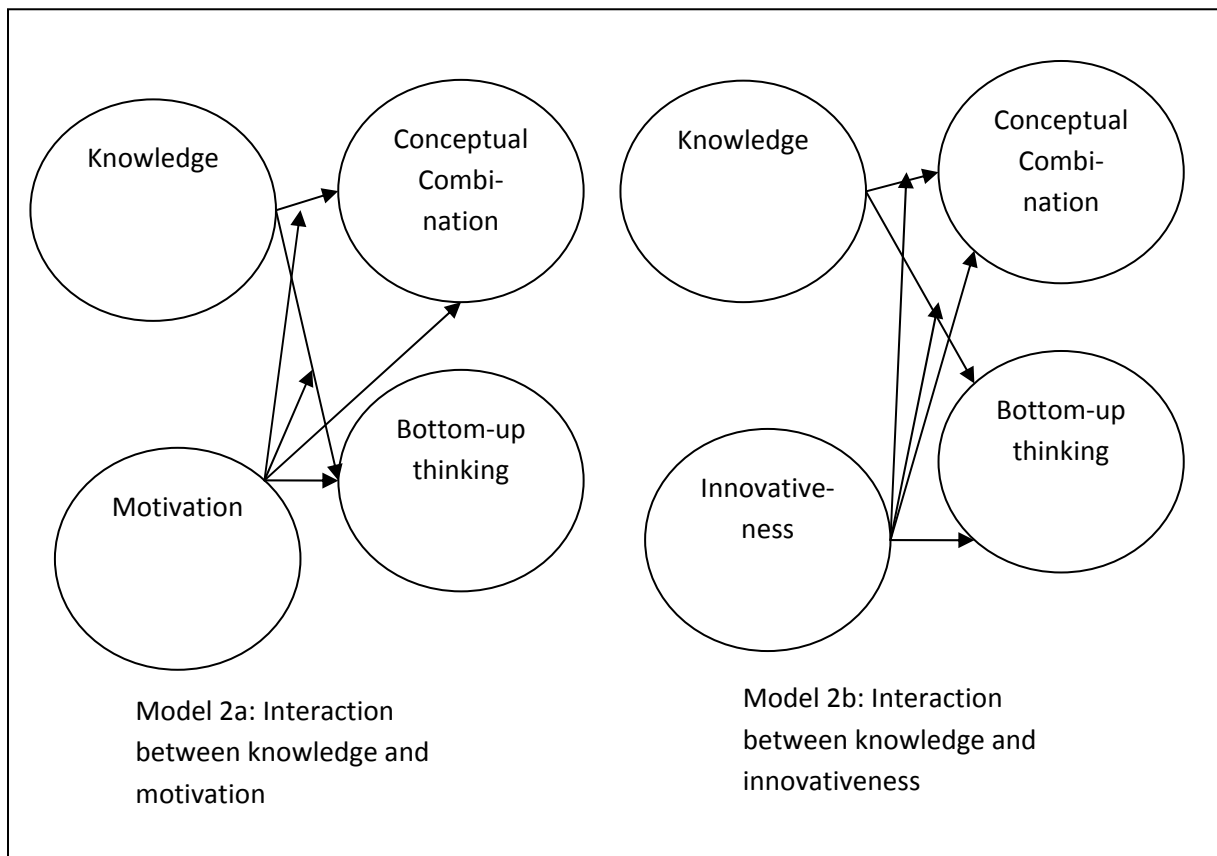


Figure 6: Model 2a and 2b: Effects of interactions between knowledge and other dimensions on creative processing

### 3.2.2 Relationships between psychological facilitators of creativity and creative product

As discussed in Chapter 2, literature on creativity generally conceptualizes the phenomenon as a formative construct, in which the creative solution is both highly original and highly useful and also aesthetic. However, some research suggests that antecedents may assert different influences on the different dimensions (Moreau and Dahl, 2005). Therefore, two models are developed, one in which creativity is represented by one dimension measured as the sum of scores on originality, usefulness, and aesthetics and one in which creativity is represented by three dimensions, including originality, usefulness, and aesthetics.

Knowledge is the resource on which new ideas are based. The literature offers support for two forms of relationships between creativity and knowledge: the tension view, which holds that the relationship follows an inverted U shape, and the foundation view, which holds that the relationship is positive and linear. Chapter 2 discussed that, in general, research supporting the tension view focuses on creativity in terms of “deep changes”, or changes that substantially modify how people generate a satisfactory solution. Weisberg (1993) argues that in real-world situations, deep change that makes experience detrimental is not very common. To produce something creative, there must be a starting point, and in most situations, that starting point is



existing knowledge and experience. However, because the focus of this research is on mundane, everyday problems, a positive relationship between knowledge and creativity is expected.

Research linking motivation to creativity has largely focused on motivation as a stable psychological intrinsic or extrinsic orientation. The current research conceptualizes motivation as a baseline attitude or interest in performing a specific task or in a specific domain. Highly motivated people were hypothesized to search internal and external sources and engage in a more creative cognitive process. Research shows a strong positive link between creativity and motivation in many domains, including consumption domains (Amabile et al, 1994, Amabile, 1982, Amabile, 1996, Burroughs and Mick, 2004). Therefore, the solution is expected to be more creative when the person is highly motivated

Self-efficacy refers to a person's tendency to rely on his or her own abilities to organize and execute the steps necessary to perform a task or solve a problem. Research show that people with high levels of self-efficacy are more successful in problem solving than their peers at the same level of skill but with lower self-efficacy (Bandura and Jourden, 1991). People with low levels of self-efficacy may be likely to choose less creative, mainstream solutions because such solutions are typically more familiar and safer choices. Thus, a positive relationship is proposed between creativity in solution and self-efficacy.

Innovativeness is conceptualized herein as an enduring personality variable that distinguishes adapters (conforming and methodical) from innovators (non-conforming and risk seeking). Innovativeness has been equated with consumers' inherent desire to seek out the novel and creative (Bagozzi and Foxall, 1996). Therefore, it is likely that innovativeness is positively related to creativity in solution.

Figure 7 presents a model in which all four psychological facilitators of creativity are expected to have a positive influence on creative product.

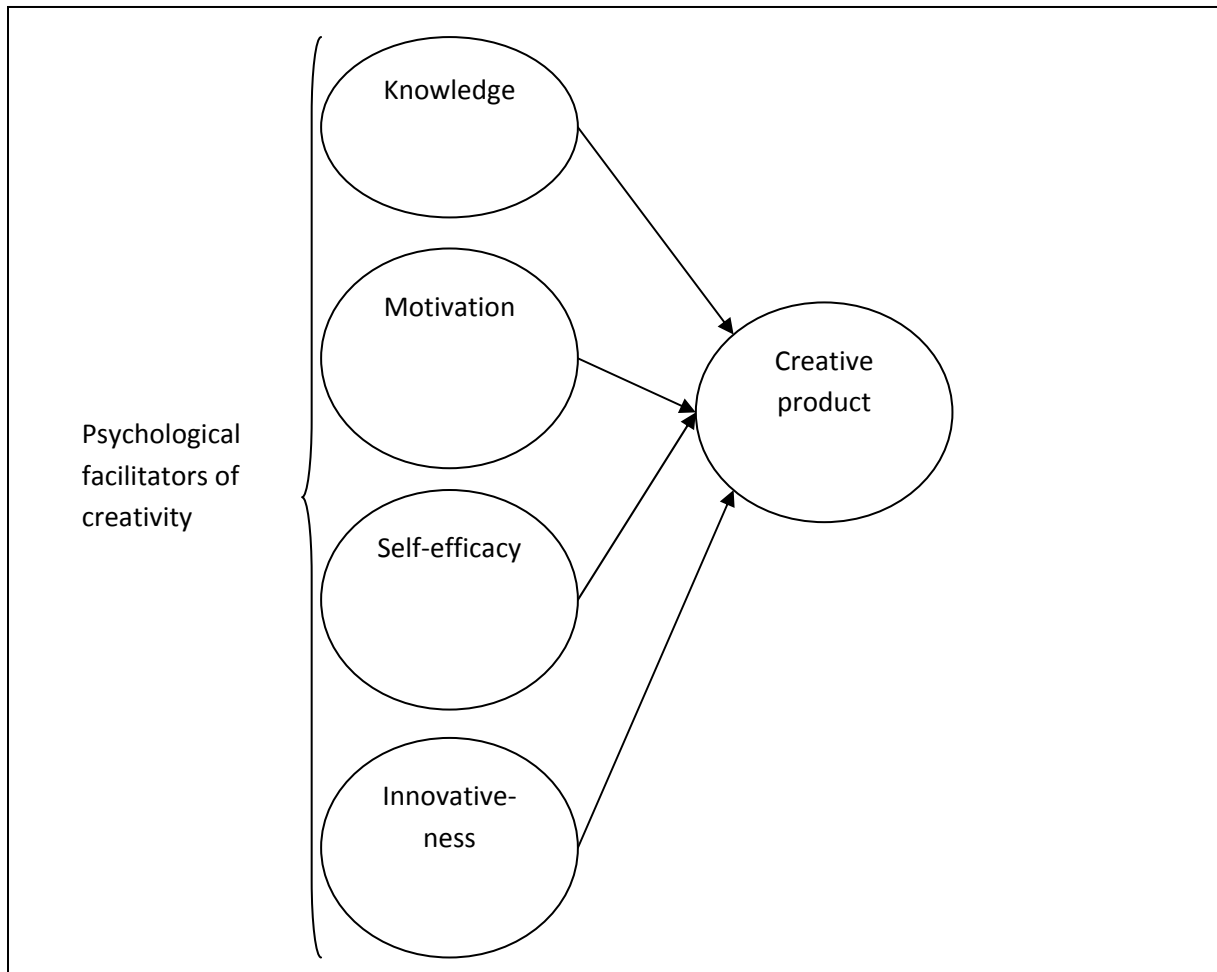


Figure 7: Model 3: Proposed relationships between psychological facilitators of creativity and creative product<sup>3</sup>

Chapter 2 argued that creative solutions to consumption problems are best conceptualized as a three-dimensional construct. Research suggests that some of the psychological facilitators of creativity assert different influences on the different dimensions of creative product. Knowledge is one such factor. For example, Rietzschel et al. (2006) found that though knowledge had a positive influence on the originality of ideas, it did not affect the feasibility of ideas. Knowledge is expected to have a positive influence on originality, and the relationships are estimated with usefulness and aesthetics to determine whether knowledge influences those dimensions in this empirical setting. Motivation may also have a different influence on the different creative product dimensions. In the domain of consumption, less motivated people are likely to choose a few important attributes and make a decision based on the alternatives' performance on them. This may result in a solution that is high on usefulness but not necessarily very original. Self-efficacy is also assumed to vary in terms of how it influences the creative product dimensions. People with low levels of self-efficacy choose familiar, mainstream solutions, which are also not very original. Conversely, people with high levels of self-efficacy may feel confident enough to choose highly original but less useful solutions. Finally, innovative

<sup>3</sup> All relationships are expected to be positive.

consumers are likely to search for novel solutions, which should result in a more appropriate solution. Therefore, positive relationships are proposed between innovativeness and originality and usefulness.

Although research on consumer creativity has not included the aesthetics dimension, it may be an important dimension for understanding creativity in the domain of consumption (Burroughs et al., 2008). Therefore, the relationship between aesthetics and each of the creative product dimensions is estimated when the model is tested to gain a better understanding of the factors influencing the aesthetics of the solution. Figure 8 presents Model 4, in which each of the dimensions representing psychological facilitators of creativity influence each of the three creative product dimensions.

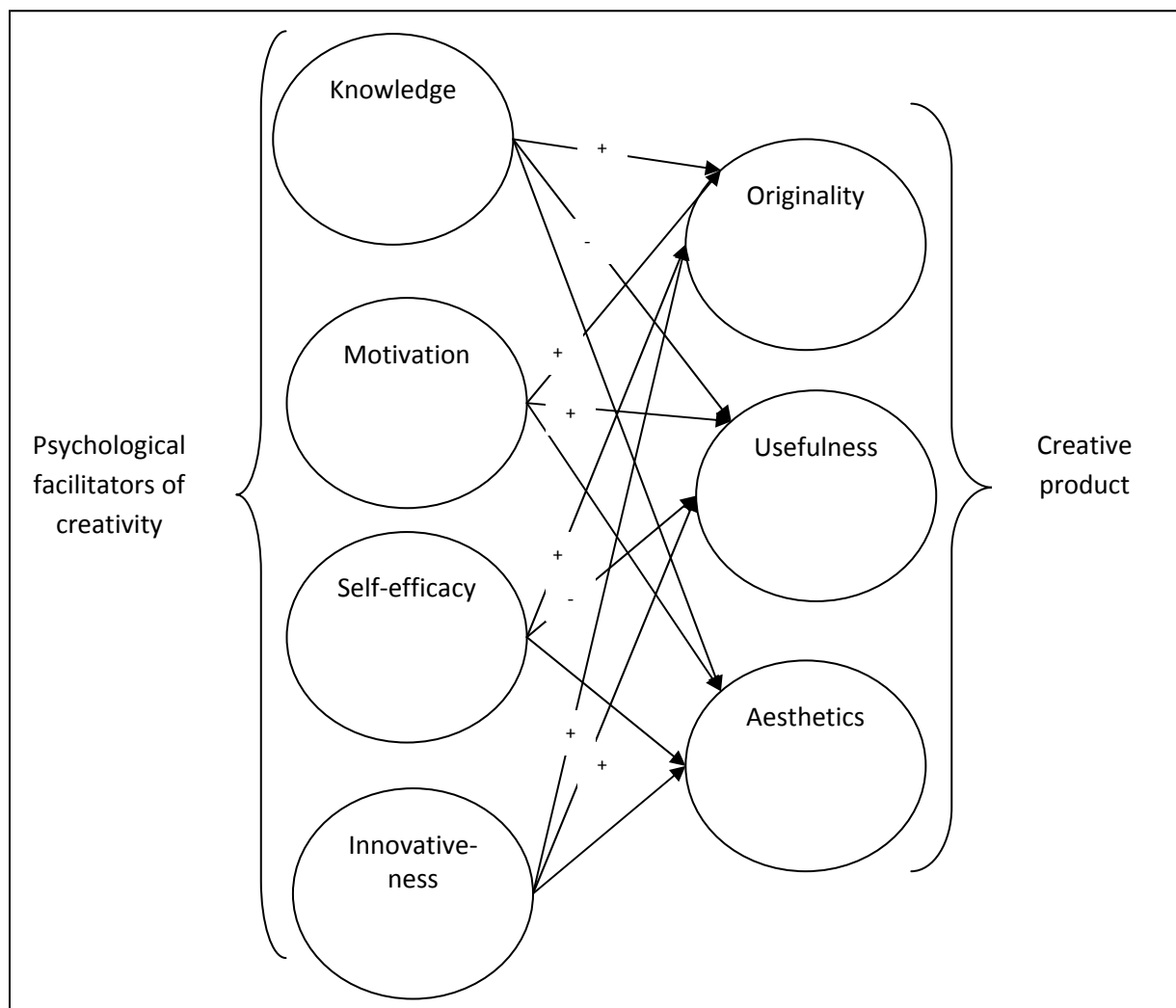


Figure 8: Model 4: Proposed relationships between psychological facilitators of creativity and creative product

### 3.2.3 Relationships between creative cognitive processing and creative product

Researchers assume that creative cognitive processing leads to creative production and that variations at different stages of the problem-solving process lead to variations in creativity in solution (Lubart and Getz, 1997, Weisberg, 1993). The current research identifies two dimensions of creative cognitive processing; conceptual combination and bottom-up thinking. Conceptual combination refers to “a process whereby

previously separate ideas, concepts, or other forms are mentally merged” (Ward, 2004, p. 176). Research conducted on conceptual combination has explored how distant concepts, such as discrepancy or dissimilarity of components, yield original ideas (Ward, 2004, Ward, 1995). In line with this, a consumer who uses knowledge from different categories and combines them to come up with a decision to a consumption problem is likely to produce more creative solutions. The other dimension of creative cognitive processing is bottom-up thinking, a dimension adapted from Moreau and Dahl (2005). The idea is that when consumers follow the conceptual flow, they will use top-down thinking and settle for the first satisfactory solution that comes to mind. When they deviate from this and evaluate different aspects of potential solutions in a bottom-up approach, more creative solutions will likely come to mind. Therefore, it is proposed that both dimensions of creative cognitive processing have a positive influence on creative product. Figure 9 presents Model 5, illustrating the proposed relationships between the creative cognitive processing dimensions and creative product.

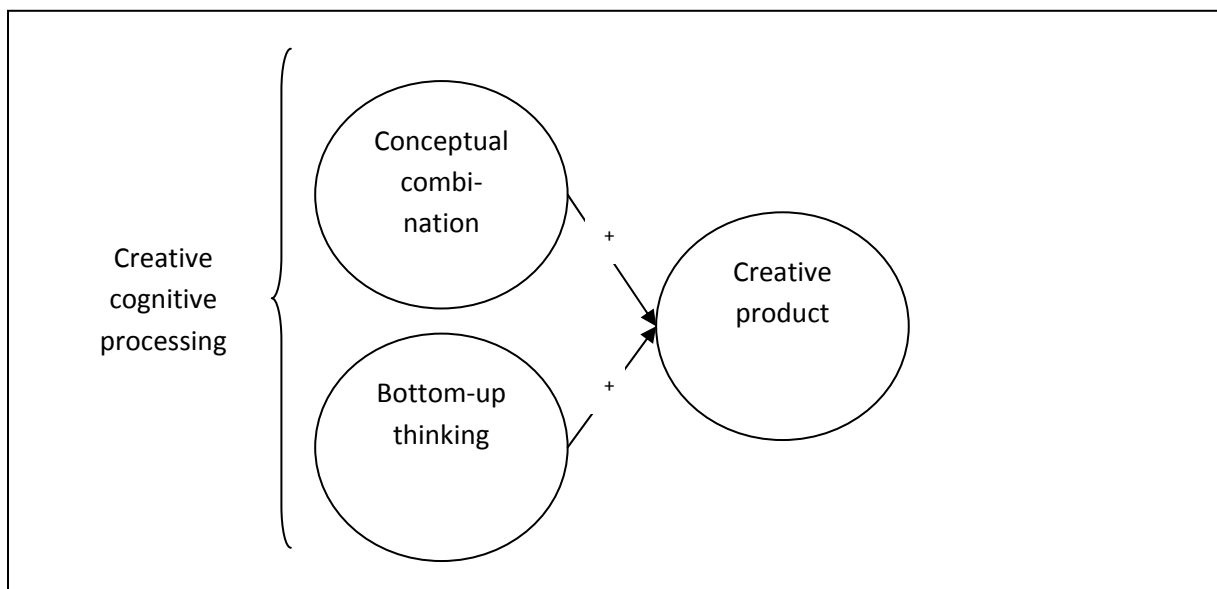


Figure 9: Model 5: Proposed relationships between creative cognitive processing dimensions and creative product

This research conceptualizes creative product as a three-dimensional product instead of a two-dimensional one, and thus the creative processing dimensions are expected to have different influence on each of the creative product dimensions. According to literature on consumer creativity, bottom-up thinking leads to more original, but not necessarily more useful, solutions (Moreau and Dahl, 2005). The relationship between conceptual combination and creative product has not been tested previously. Therefore, the conceptual combination reflects the final stages of the creative process, in which ideas are evaluated in terms of how well they fit the different needs and requirements of consumers. The more categories of knowledge considered, the more creative the process is. When consumers conduct a broader search and assessment of needs, they are more likely to end up with a solution that is high on usefulness and originality. Thus, it is proposed that while bottom-up thinking should have a positive influence on originality and a negative influence on usefulness, conceptual combination should have positive influence on both usefulness and originality. The relationship to

aesthetics has not been tested previously, but it is estimated in this empirical context to determine the form of the relationship to creative processing. Model 6 in Figure 10 illustrates the expected relationships between the two creative cognitive processing dimensions and the three creative product dimensions.

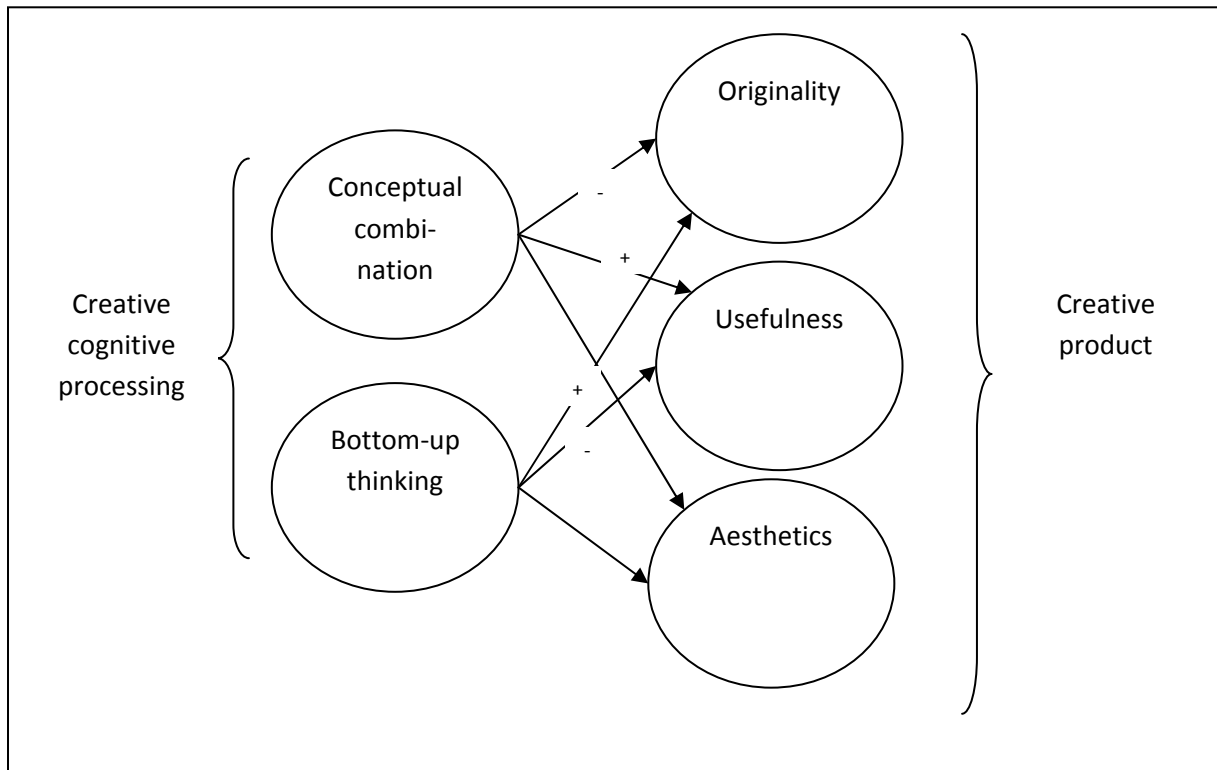


Figure 10: Model 6: Proposed relationships between creative cognitive processing and creative product dimensions

In addition to the direct effects of creative processing on creative product, interaction effects are also expected. The theory reviewed in Chapter 2 indicates that creative processing is likely to be strongly linked to knowledge. A consumer’s knowledge is the information and the performance scripts stored in memory. Therefore, creative processing is not likely to be fruitful if there is little knowledge to retrieve and combine. Thus, knowledge is likely to moderate the effect of creative processing on originality such that higher levels of originality are expected when both creative processing and knowledge are high. If the combination of high knowledge and high creative processing yields an even more original/out-of-the-ordinary result, if both creative processing and knowledge are high, the usefulness of the solution should be lower. In their study on knowledge accessibility and creativity, Rietzschel et al. (2007) concluded that the originality but not the feasibility of ideas was dependent on the degree to which people had engaged in deep exploration of their knowledge. The theoretical explanations for these findings are consistent with the creative cognition approach (Finke et al., 1992), assuming that the originality of ideas depends on retrieval and combination of existing knowledge. Thus, accessibility and use of knowledge as well as the amount of knowledge stored are important for originality. Therefore, it is likely that creative processing and knowledge interact in a way that increases originality when both creative processing and knowledge are high but decreases usefulness when both are high. Model 7a in Figure 11 illustrates these relationships.

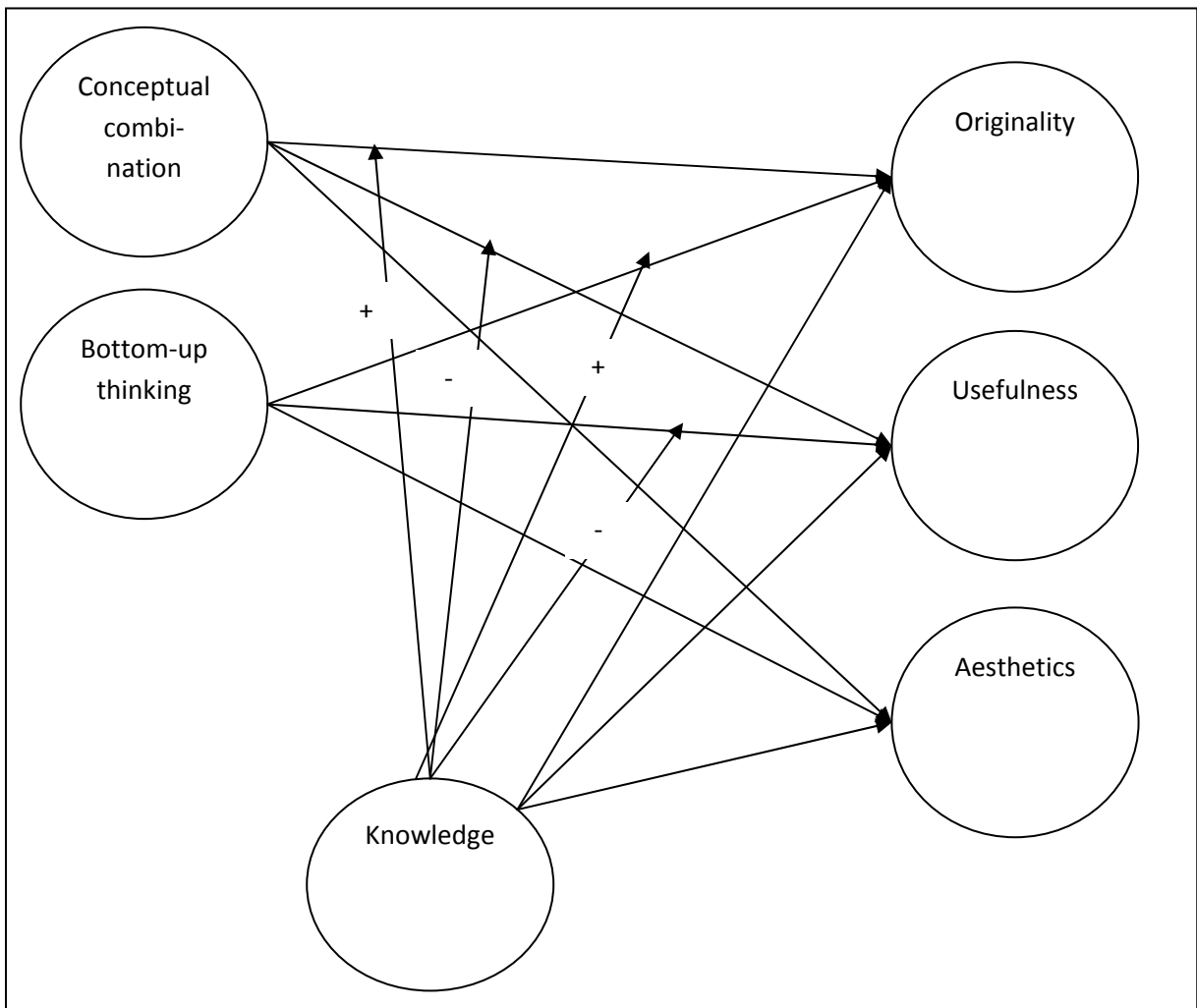


Figure 11: Model 7a: Proposed effects of interaction between knowledge and creative processing on creative product dimensions

As mentioned previously, motivation is another dimension that is likely to interact with creative processing. Motivated consumers tend to have a genuine interest in the domain and thus may focus more on coming up with a solution that is appropriate to the problem at hand. Therefore, when motivation is high and people engage in creative processing, the person's interest in the final solution will likely lead to a more useful, but not necessarily a more original, solution. Model 7b in Figure 12 illustrates the proposed relationships.

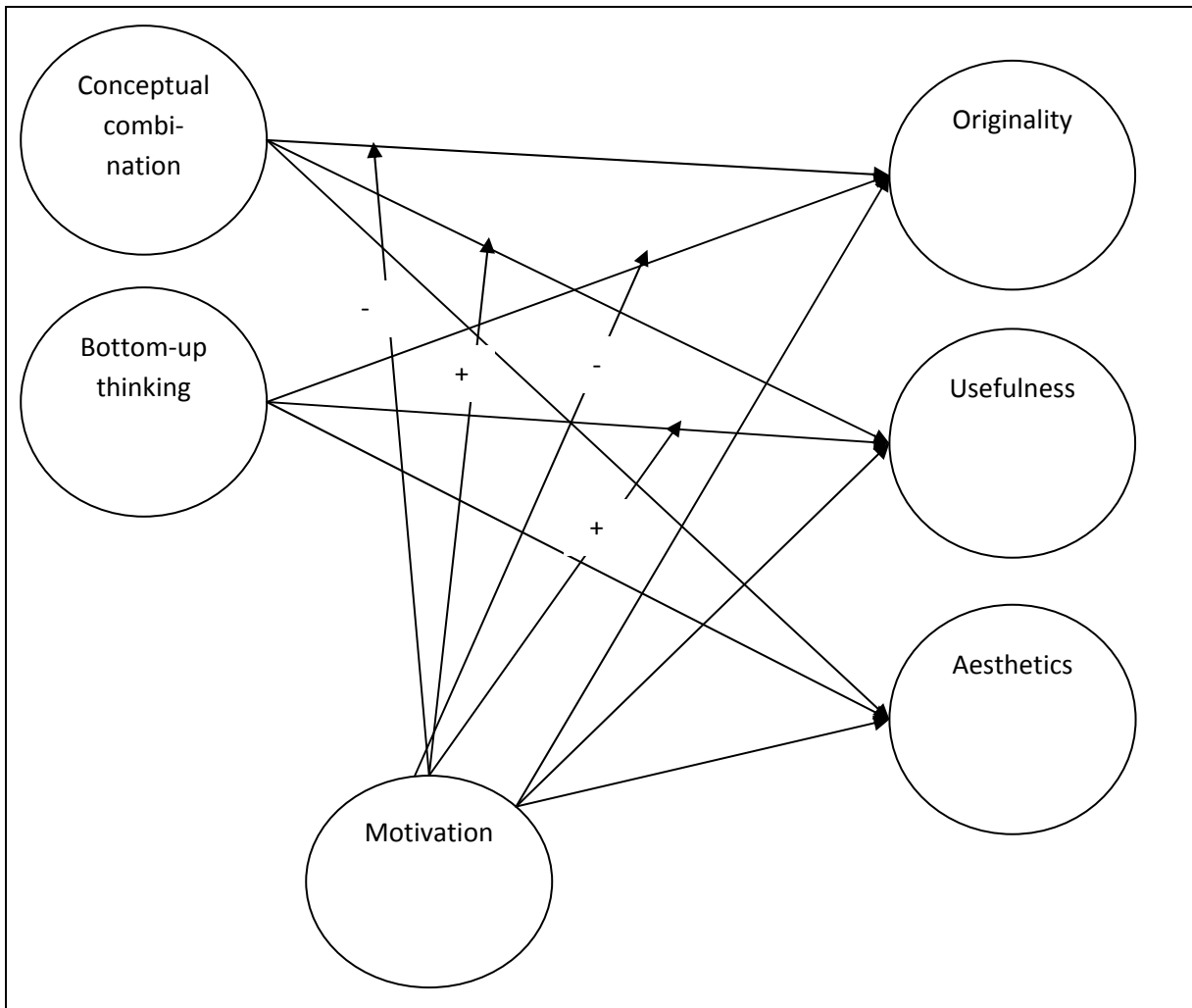


Figure 12: Model 7b: Proposed effects of interaction between motivation and creative processing on creative product dimensions

### 3.2.4 Creative cognitive processing as a mediator

This research proposes that creative processing is a partial mediator of the effects of psychological facilitators of creativity on creative production. An alternative to a mediation model is a model in which psychological facilitators of creativity and creative processing both have a direct influence on creative production, but there is no mediation of the effects from psychological facilitators of creativity through creative processing to creative product. To my knowledge, no empirical research links the three creativity concepts. Therefore, any hypotheses regarding the nature of the relationships must rely on theoretical developments. The four dimensions of the psychological facilitators of creativity in this study are all assumed to have a direct influence on creative product. If creative processing mediates the effects of psychological facilitators on the creative product dimensions, this mediation is hypothesized to be only partial. This model is in line with what would be predicted if the hypotheses developed previously were supported. Figure 13 presents the hypothesized model and the two rival models:

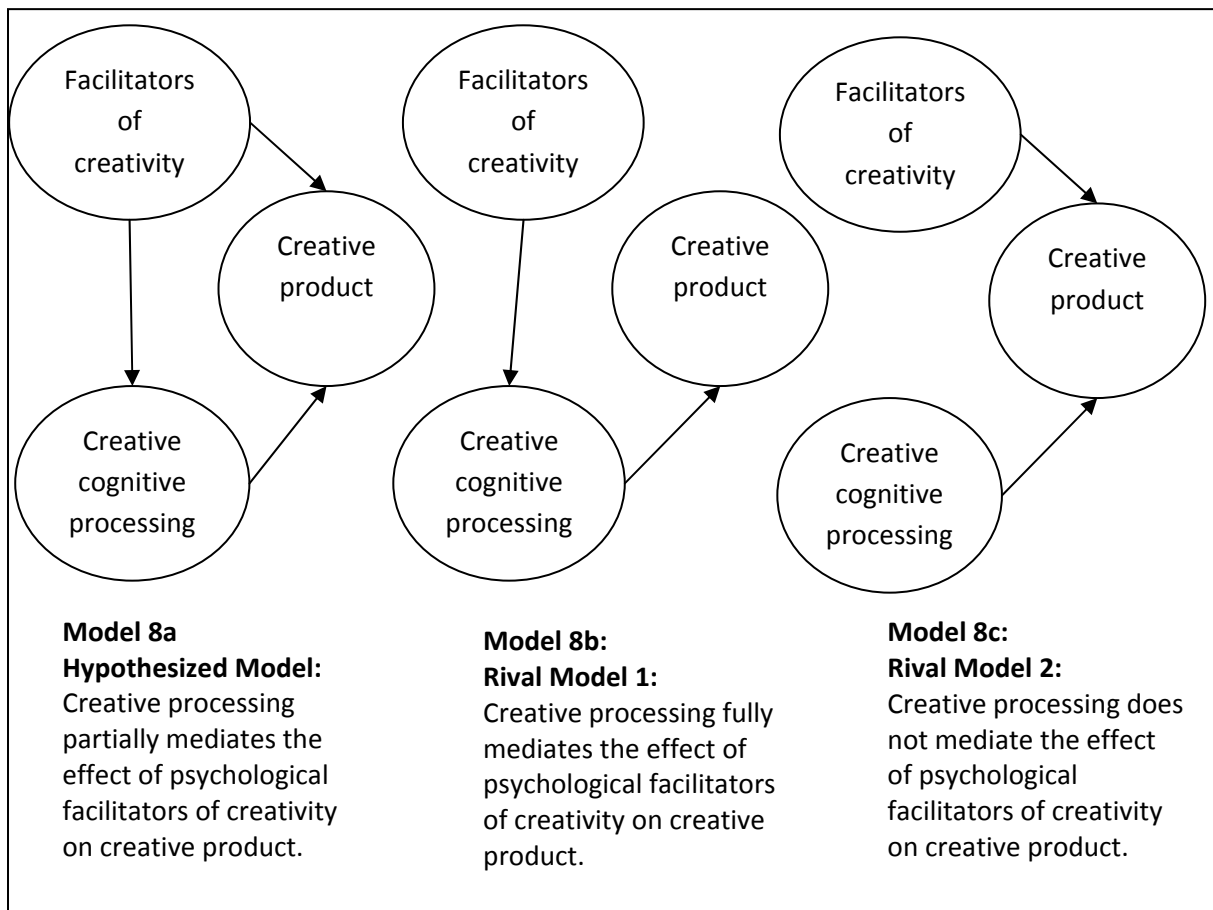


Figure 13: Models 8a, 8b, and 8c: Hypothesized and rival models proposing creative cognitive processing as a mediator of the effects of psychological facilitators of creativity on creative product

### 3.2.5 Effects of creative cognitive processing and level of creativity in product on solution evaluation

In the context of consumer creativity, research examines not only if and how consumers use creative processing in a decision situation but also the potential outcomes of such processing. For example, Burroughs and Mick (2004) found that acting creatively enhances positive affect in a decision situation. In turn, the good mood resulting from positive affect is likely to influence how consumers evaluate the outcome of the decision process. Furthermore, creative solutions are considered attractive, and it is likely that when consumers evaluate their own solutions, more creative solutions lead them to evaluate the solution more positively. Thus, it is worthwhile to investigate both whether consumers evaluate more creative solutions more positively and whether a more creative decision process lead to more favorable evaluations. Figure 14 presents a model of the relationships among creative product, creative cognitive processing, and product evaluation.



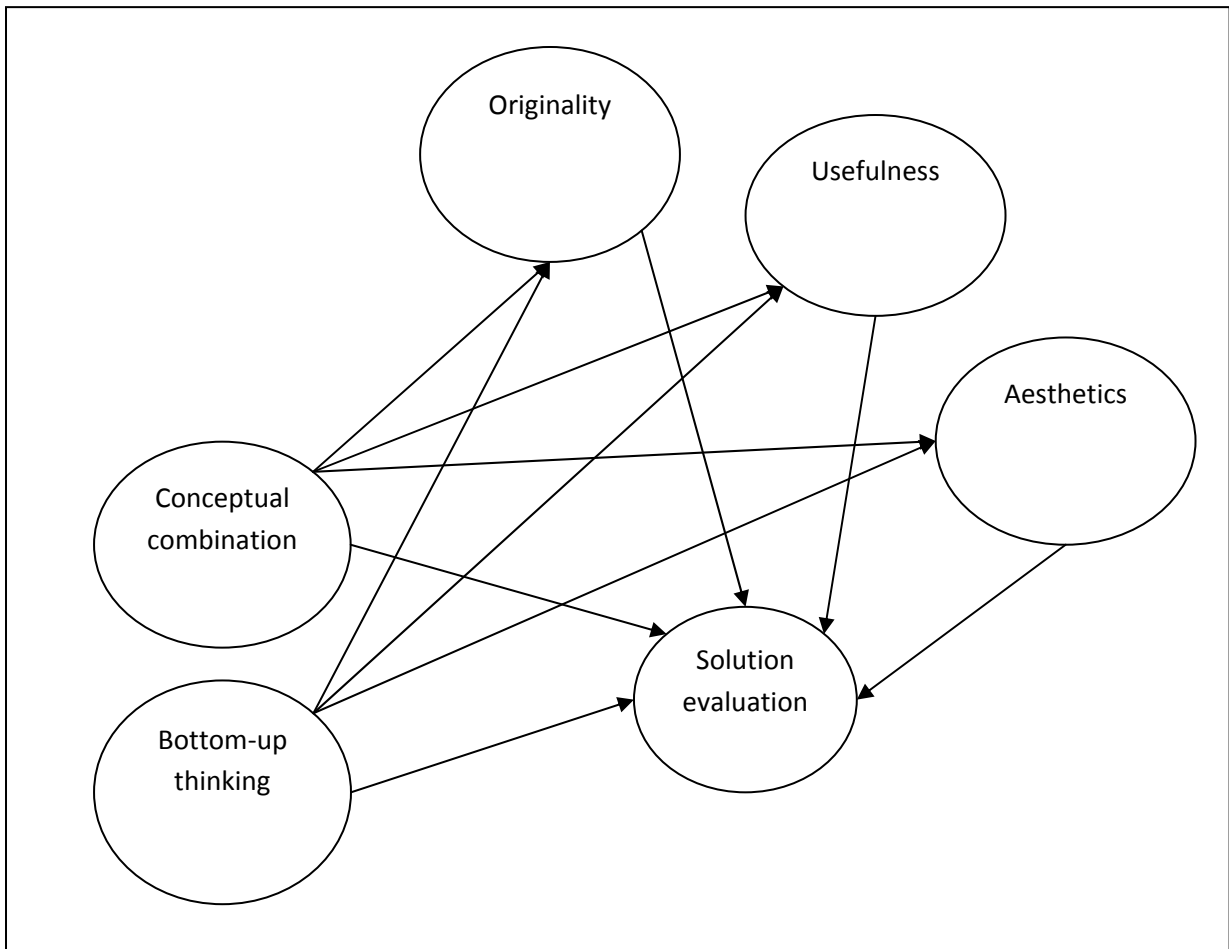


Figure 14: Model 9: Proposed effects of creative processing and creative product on solution evaluation<sup>4</sup>

<sup>4</sup> All paths are expected to be positive.

### 3.2.5 Summary of models

Table 2 presents a summary of the models to be tested in this study.

|  |
|--|
| Model 1: Effects of psychological facilitators of creativity on creative processing                |
| Model 2a: Effects of interaction between knowledge and motivation on creative processing           |
| Model 2b: Effects on interaction between knowledge and innovativeness on creative processing       |
| Model 3: Effects of psychological facilitators of creativity on one-dimensional creative product   |
| Model 4: Effects of psychological facilitators of creativity on three-dimensional creative product |
| Model 5: Effects of creative processing on one-dimensional creative product                        |
| Model 6: Effects of creative processing on three-dimensional creative product                      |
| Model 7a: Effects of interaction between knowledge and creative processing on creative product     |
| Model 7b: Effects of interaction between motivation and creative processing on creative product    |
| Model 8a-c: Mediation analysis   |
| Model 9: Effects of creative production and creative cognitive processing on solution evaluation   |

*Table 2: Overview of proposed models*

## **Chapter 4: Methodology**

This chapter outlines the consideration and choice of methodology for conducting the empirical study. Although development of the conceptual model guiding this research belongs more in the context of discovery, with an emphasis on the relationship between the substantive and the theoretical domain, this research advances toward the context of justification in its aim to test the proposed relationships. To conduct a valid test, three steps must be undertaken. The first step is to determine how to measure each concept. To the extent that valid and reliable measures of a concept exist, these are employed. When there are no established measures, they must be developed. Second, a plan for collecting data to test the proposed relationships must be decided. This involves choices regarding methods of data collection, sampling, and empirical setting. Finally, methods of analysis need to be chosen.

As with any type of research, validity is a primary concern. Section 4.1 presents the research design, followed by presentations of measures for the psychological facilitators of creativity in section 4.2. Section 4.3 presents development of the measures for creative processing, and section 4.4 discusses the measures of creative product. Section 4.5 discusses the concept of validity and outlines how validity issues are addressed in this research. Finally, section 4.6 presents the methods of analysis.

### **4.1 Research design**

Research design is the overall plan for how the research is conducted. It involves choices regarding methods of data collection, sampling, empirical setting, and operationalization of measures. A cross-sectional survey design was chosen. This design is suitable because it allows for measurement of creativity in an open, unconstrained setting and because it is suitable to test hypotheses about relationships to independent variables that are not easily manipulated (the psychological facilitators of creativity included here are enduring characteristics of consumers).

The empirical setting was a relatively realistic consumption situation in which participants were asked to come up with a suggestion of what they would serve friends for dinner. This procedure is a revised version of Torrance's (1962, 1974) "what-if" test of creativity, and it was used to elicit responses that would serve as the product, or solution, to be deemed more or less creative. The original "just-suppose" test used improbable scenarios such as "just suppose sunshine were solid" and ask participants to imagine what would happen or what they would do if the scenario were true. Responses are coded in terms of fluency and originality, and the test shows long-range predictive validity (Torrance and Safter, 1989). In their study, Burroughs and Mick (2004) used a revised version of this test, in which, instead of improbable scenarios, they focused on a down-to-earth consumption

situation (scuffed shoes and no shoe polish available). The current research used this same test and invited participants to respond to a realistic decision situation.

To obtain measures of creative processing, a procedure adapted from Moreau and Dahl (2005) was used. Immediately after responding to the scenario, participants described in detail what they had been thinking about during decision making, what factors they had considered, and what they had thought of first and last. Because the protocols were recorded immediately after completion of the just-suppose test, problems pertaining to loss of memory (i.e., being unable to recollect the thought process) were held at a minimum. The protocols were coded according to creative process measures. Following the just-suppose test and the creative processing protocols, participants responded to questions designed to measure psychological facilitators of creativity and satisfaction with the decision.

In line with practice in creativity research, independent judges scored the solutions and the thought protocols on items developed to measure creativity. (More details on development of these items are presented in subsequent chapters.) Measures of psychological facilitators of creativity were based on existing scales.

Data were collected among college students at three different colleges in Norway. The study included some participants who were likely to have high and some participants who were likely to have low levels of knowledge, motivation, and self-efficacy in the domains in question. Thus, participants were recruited both from introductory courses in a business school (likely to score low on these dimensions) and from third-year courses at a hotel and restaurant management school (likely to score high on these dimensions). A total of 258 questionnaires were collected; of these, 13 were removed because of missing answers on the scenarios, for a total of 245 usable questionnaires.

## **4.2 Measures of psychological facilitators of creativity**

The four psychological facilitators of creativity—knowledge, motivation, self-efficacy, and innovativeness—were all measured using existing scales from consumer research literature. Measures of knowledge in consumer literature falls into three categories (Brucks, 1985): (1) the person's perception of how much he or she knows; (2) the amount, type, and/or organization of what a person actually has stored in memory; and (3) the amount of purchasing or usage experience with the product. The first and third categories are subjective assessments of knowledge. Such assessments are typically made on Likert-type scales, and respondents are often asked to assess their knowledge and experience relative to their peers and/or relative to experts in the domain. In the current research, the respondents subjectively assessed both their knowledge of the relevant

product category (meals) and their knowledge of the procedures (how to prepare a meal). Consistent with previous research, the respondents provided a self-assessment of knowledge in comparison with the general population, friends/peers, and expert (Brucks, 1985, Johnson and Russo, 1984, Bettman and Park, 1980, Park et al., 1994).

To measure motivational orientation, the intrinsic motivation part of the Situational Motivation Scale (Guay et al., 2000) was adjusted to suit the domain investigated herein. This scale has been tested and found to be a reliable and valid measure of motivational orientation. Because the hypotheses predict effects pertaining to different levels of intrinsic motivation, the parts of the scale measuring identified regulation, external regulation, and amotivation were not included.

Several scales of generalized self-efficacy, as well as efficacy in specific domains, have been developed and tested (Schwarzer, 1993). On the basis of these scales, researchers use adjusted scales to fit the purpose of their research. To measure self-efficacy in this study, an adjustment of a scale used to measure self-efficacy beliefs towards the use of a computer was used (Hill et al., 1987).

The measurement of innovativeness builds on the Kirton Adaption-Innovation Inventory (KAI) (Im et al., 2003). Researchers have tested this instrument for validity and reliability in several settings (Im et al., 2003, Bagozzi and Foxall, 1996, Taylor, 1989). Participants are asked to evaluate whether it is easy or hard to describe their personality using 11 items on a five-point scale anchored by “very hard” and “very easy”. Figure 15 presents the measurement model for psychological facilitators of creativity

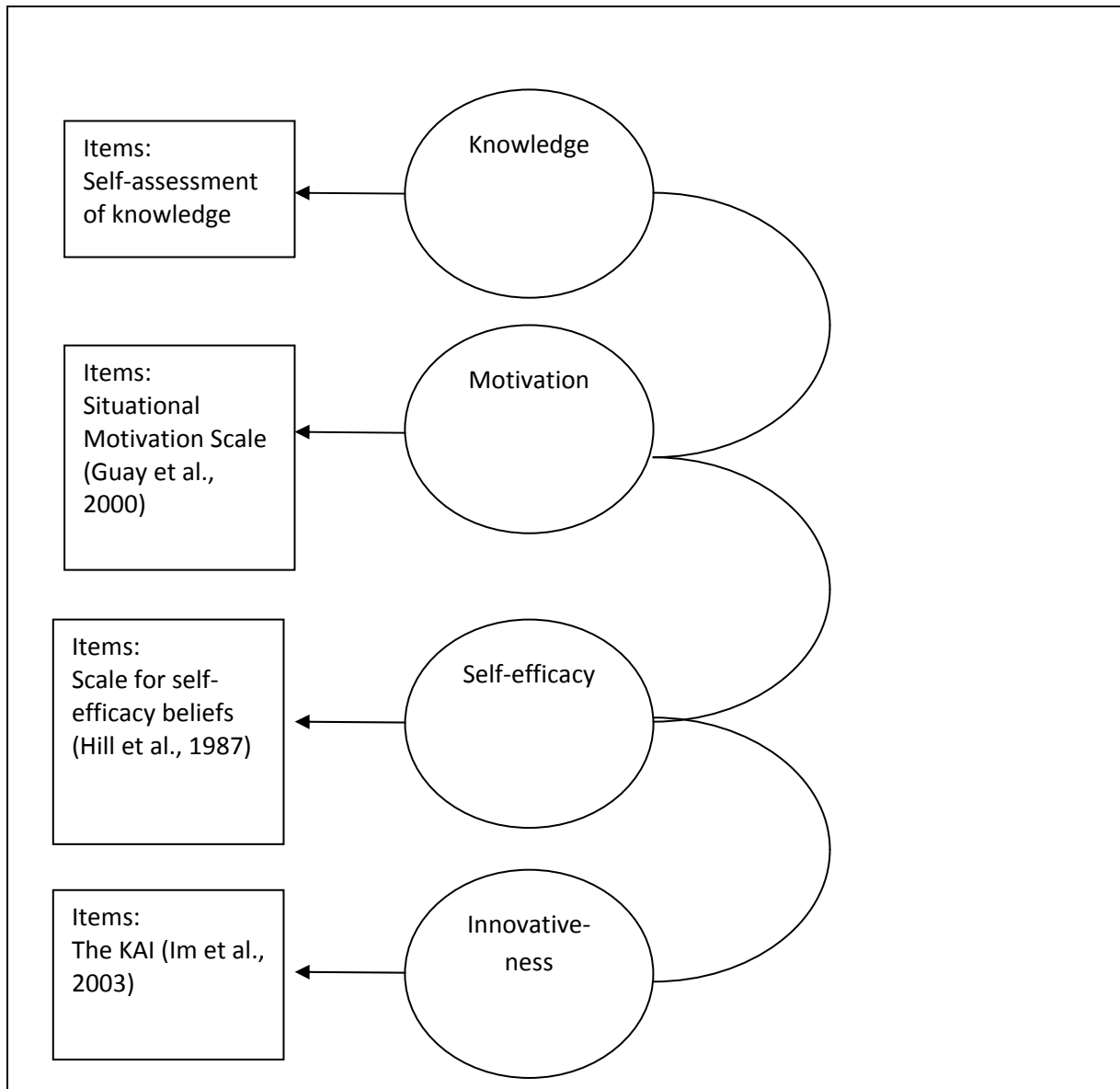


Figure 15: Measurement model for the "Psychological facilitators of creativity" model

All scales used herein were developed in English, and so it was necessary to translate the instruments before applying the questions on a Norwegian sample. A back-translation procedure was applied, in which the instrument was first translated from English to Norwegian and then back-translated to English by a person with good English and Norwegian skills. This produced two versions of the same instrument in the original language, and thus the quality of the translation could be evaluated.

### 4.3 Measures of creative processing

Other than Moreau and Dahl's (2005) measures of bottom-up thinking, to my knowledge, no other established scales measuring creative processing exist. Therefore, items needed to be generated for the purpose of this study. Two focus groups were conducted for the purpose of generating this list of

items. Each focus group began with a short presentation of literature on creative processing, including a description of the Geneplore model, the path of least resistance, and conceptual combination. Participants were then asked to suggest ways that creative processing could be measured. The exact wording of the task was as follows: “Imagine that someone told you how they had been thinking during a consumer decision task. Given what you just learned about creative processing, what should you look for in their description in order to determine whether the thought process could be labeled creative or not?” Participants took a few minutes to think about this question before discussing it. In addition to items measuring conceptual combination, such as the number of different categories of thought and how unique the categories considered were, participants suggested measures of bottom-up thinking, such as whether they thought about attributes or different uses or about a specific brand. The results of the two focus groups were similar, and at the end of each session, a conclusion was presented. Table 3 summarizes the conclusions with a list of characteristics of the reported thought processes that indicate high creative processing.

| <b>Stage in creative process</b>    | <b>Characteristic of thought process</b> | <b>Description of measures</b>   | <b>Indications</b>  |
|-------------------------------------|--|--|---|
| Generation of ideas                 | Bottom-up thinking                       | To what extent does the report indicate that the person first came to think of a specific brand or type of product and second, or not at all, considered attributes and/or ways to use the product?<br>To what extent does the report indicate that the person first came to think about attributes and/or ways to use the product and second or not at all a specific brand or type of product? | High degree of bottom-up thinking (i.e., came to think of attributes and/or ways to use the product first and then brand/type of product) is indicative of higher degrees of creative processing. |
| Exploration of ideas to fit problem | Conceptual combination                   | To what extent does the report indicate that the person has been considering different goals and constructed different goal oriented categories during decision making?  | Higher number of goal-oriented categories, and more unique goal-oriented categories are indicative of higher degrees of creative processing.  |

*Table 3: Result from focus group interviews generating items to measure creative processing*

The bottom-up thinking characteristics are in line with Moreau and Dahl's (2005) scale. These were designed so that independent judges could read each thought protocol and indicate the degree to which the protocol described a situation in which the participant had thought first of attributes and then of the product/brand (bottom-up thinking). The second question asked the judges to indicate the extent to which the participant seemed to have thought of the product/brand first and then important attributes (top-down thinking). Two items were developed to measure conceptual combination. First, each thought protocol was read, and the different categories of thought were identified and labeled (e.g., "I wanted to serve something healthy", and "I tried to think of something healthy" was placed in a category labeled "healthy food"). Then, each protocol was analyzed and scored in terms of whether the participants had considered each of the categories. The first item was created by counting the number of categories the participant had considered. Then, a uniqueness score was computed on the basis of how many other participants had considered a thought in the



same category. The procedure was validated by an independent judge, and disagreements were resolved through discussion. The measurement model for creative cognitive processing is presented in Figure 16.

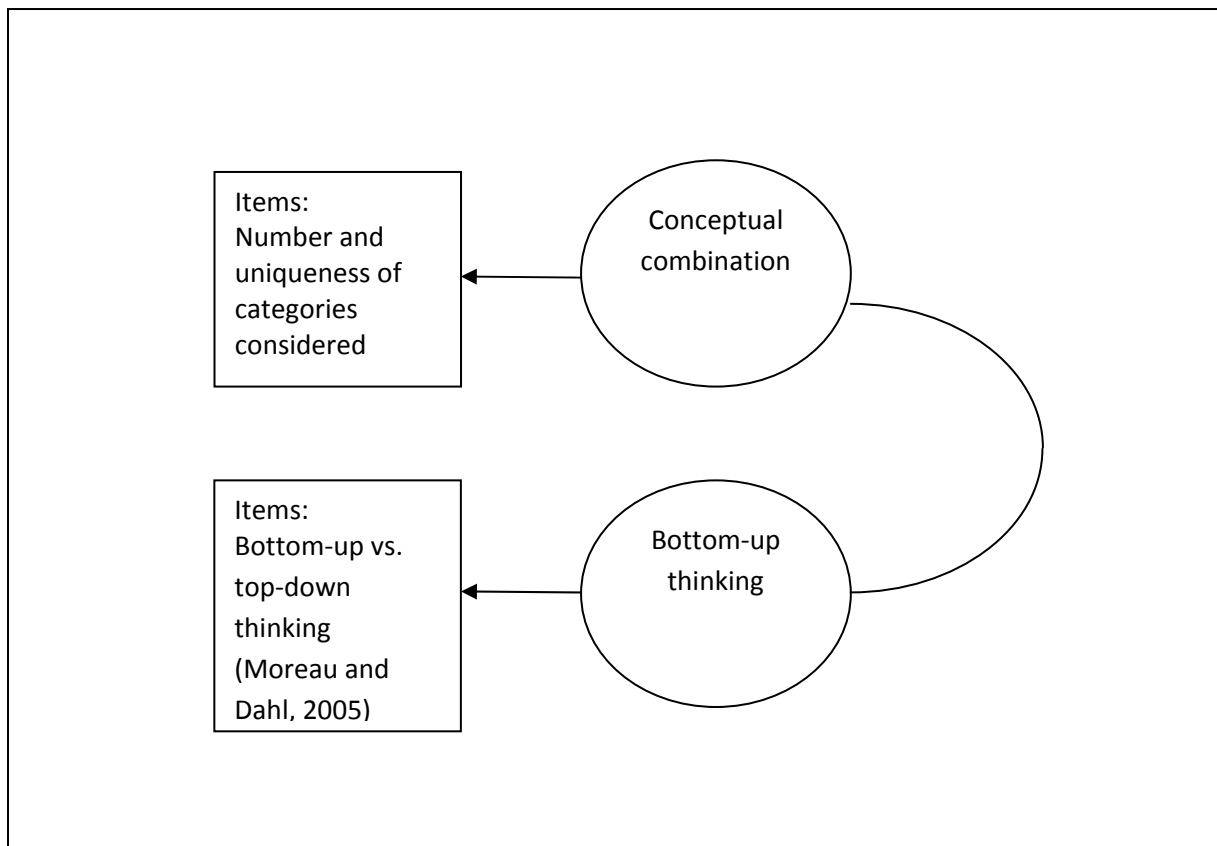


Figure 16: Measurement model for the "Creative cognitive processing" model

#### 4.4 Measures of creative product

Creativity researchers commonly use subjective assessment techniques to determine each response's degree of creativity. A product or response is considered creative to the extent that appropriate observers independently agree it is creative (Amabile 1980). Appropriate observers are those familiar with the domain in which the product was created or the response articulated. Thus, creativity can be regarded as the quality of products or responses judged to be creative by appropriate observers, and it can also be regarded as the process by which something so judged is produced." As noted in Chapter 2, the dimensions of originality, usefulness, and aesthetics are suggested used as indicators of creativity in the realm of consumption. Measures of creativity were obtained by having independent judges evaluate a response on a set of items designed to measure these dimensions. After necessary validity evaluations, the judges' scores were summed to form one indicator for each item, and then the items were summed to form one measure of creativity. This procedure indicates that creativity is typically measured by a formative measurement model.

Formative measurement models view the construct (e.g., creativity) as a function of the observables (e.g., originality, usefulness, aesthetics). In contrast, reflective measurement is based in classical test theory, in which observable indicators are reflective effects of latent constructs (Howell et al., 2007). Using a reflective measurement model to represent the creativity construct is challenging, however, because the assumption that observables should covary if they are indicators of the same latent construct may not hold. The dimensions usefulness and originality often do not correlate, or they have significant and negative correlations, because the “new and surprising” is often difficult to implement by independent judges. Moreover, recent research has demonstrated that the different dimensions of creativity may have different antecedents (Rietzschel et al., 2007; Moreau and Dahl, 2005). The current research aims to test hypotheses about the different effects on the different levels of creativity. Therefore, the study treats the creativity concept as a multidimensional concept and enters the three dimensions as independent endogenous constructs in the models. For testing the effects on creativity, the creativity construct is measured by a formative model, in which the scores for the individual dimensions are summed to form one measure of creativity. Finally, because a summated scale cannot distinguish between scores on the different dimensions, a categorical variable is computed to test differences in abilities and processes.

A concern with measurement issues also pertains to which items to use. In this case, a set of items the judges can use to score each solution needs to be identified. There are no established scales for measuring creative product in the consumption realm. Previous studies have used items from scales from other domains. Thus, for this research, a scale was developed for the purpose of measuring creativity in solutions to consumption problems. Chapter 5 presents the scale development process and resulting items. The measurement model for creative product is presented in Figure 17.

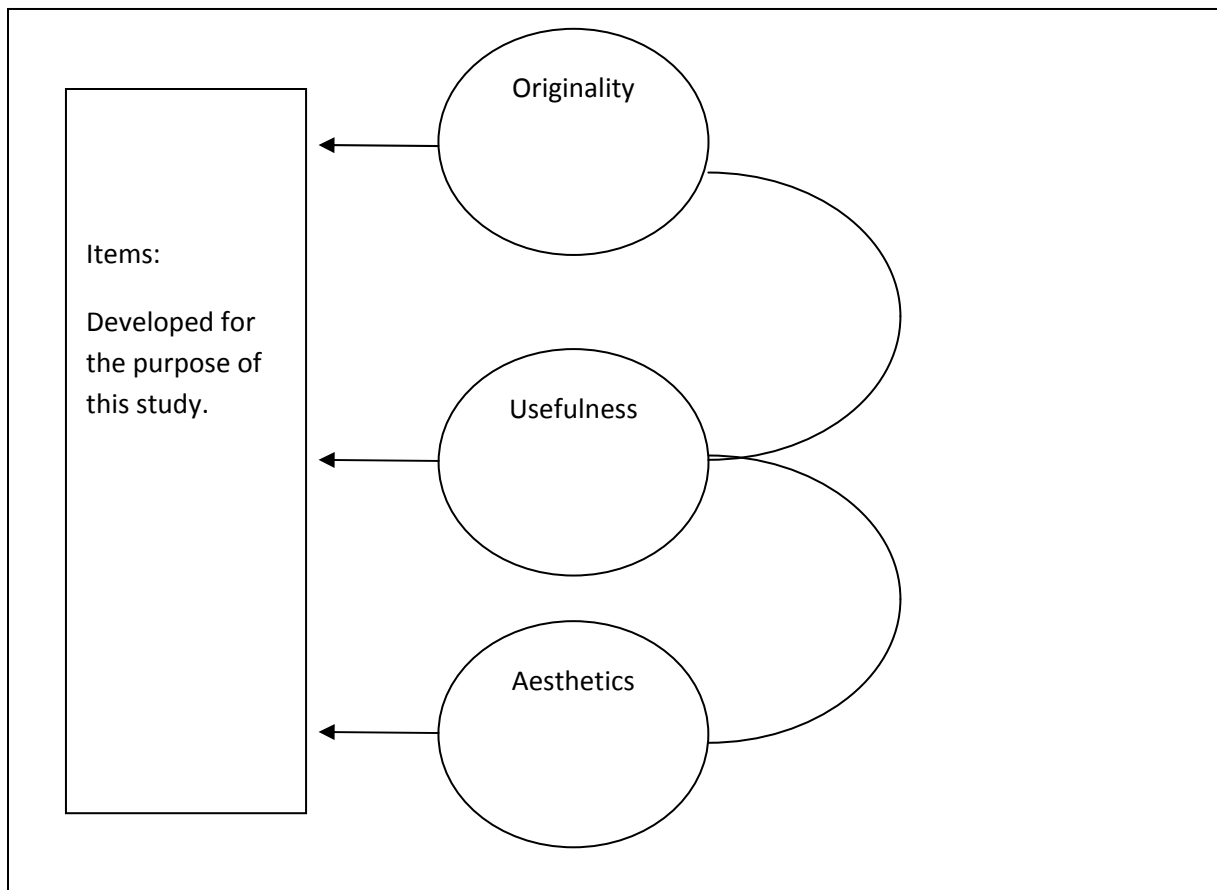


Figure 17: Measurement model for the "Creative product" model

#### 4.5 Measures of solution evaluation

Participants who came up with more creative solutions were expected to evaluate their own solutions more favourably. Consistent with literature on consumer satisfaction (Mittal et al., 1999, Oliva et al., 1995), purchase intentions and perceived attractiveness of own solution were used as indicators of solution evaluation. Purchase intentions were measured by two items: (1) the extent to which participants would implement their own solution if the situation were real and (2) the extent to which they would choose this solution sometime in the future. Attractiveness was measured by one item: the extent to which participants found their own solution attractive. All items were measured on seven-point scales.

#### 4.6 Validity considerations

A challenge in any empirical research in social sciences is to make choices and conduct research in a way that ensures the highest validity possible. If concepts such as creative processing, psychological facilitators of creativity, and creative products exist, a valid test of their relationships is one in which each concept is measured by instruments capable of capturing true variations in the concepts. When these measures are captured, it is an easy task to test the relationships between the concepts by

means of established statistical methods of analysis. The current research represents a relatively new line of inquiry, and emphasis has so far been on the context of discovery. For the proposed conceptual model to be tested, the research moves to the context of justification, and a major concern is to ensure proper and valid measures of each concept.

Few concepts are as simple, yet so difficult as validity. Consider the following conceptualization of the construct (Borsboom et al., 2004): “A test is valid for measuring an attribute if (a) the attribute exists, and (b) variations in that attribute causally produce variations in the measurement outcomes”. This implies that the relationship between an attribute and its measure is not correlational, but rather causal. A variation in the attribute *causes* variation in test scores. This is in line with the reflective measurement model, in which variations in the dimension cause variations in scores on the items, and when the co-variations between items are as expected, the measures are assumed to be reliable measures of their construct. Borsboom et al. (2004) argue that a major issue in validation is to provide a good theory to specify how different levels of the attribute lead to different item responses. This conception of validity is based on ontology and stands in sharp contrast with the epistemological basis, which focuses on test score interpretations and nomological networks. The current research acknowledges Borsboom et al.’s view and emphasizes that variations in each concept should cause variations in scores on the items developed to measure that concept. However, if the items do represent variations in the concept they are supposed to measure, satisfactory results from traditional, epistemological tests of reliability and validity are expected.

For a test to be valid, it must be reliable. Reliability refers to the degree to which the operationalization of a construct provides stable measures of observations (Troye, 1994). Reliability is obtained if different attempts to measure the same concept yield similar results (internal consistency reliability) and if a measure is stable over time (test–retest reliability). Because this research includes cross-sectional data, there were no means to assess test–retest reliability. Therefore, reliability is assessed by internal consistency measures. The consensual assessment technique was used to provide measures of creative product and creative process. The creative product concept (eight items) and the bottom-up dimension of the creative processing concept (two items) are measured by three judges who assessed creativity in each solution (creative product) and another three judges who assessed creativity in each thought protocol (creative cognitive processing). One test of reliability is to assess the degree to which the independent judges arrive at similar scores on each item. This method is referred to as the interjudge reliability test and is performed by calculating the coefficient alpha for each item. Coefficient alpha gives a summary measure of intercorrelations among a set of items (Churchill Jr., 1992, Churchill Jr., 1979). A

coefficient alpha of 1 indicates that all judges gave exactly the same score to each of the 245 solutions. Previous uses of the consensual assessment technique report interjudge reliabilities between .70 and .99 (Amabile, 1982); in this research, coefficient alphas greater than .70 are acceptable as indication of reliable measures. For the measurement models, reliability can also be measured by calculating composite reliability coefficients for the latent variables. This coefficient is an indication of how much of the variation in the observations is explained by the underlying latent variable and is calculated with the following formula:

$$\rho_c = \frac{(\sum \lambda)^2}{[(\sum \lambda)^2 + \sum (\theta)]}$$

where  $\rho_c$  = composite reliability,

$\lambda$  = indicator loadings, and

$\theta$  = indicator error variances.

Composite reliability for each latent variable should be greater than .6 (Bagozzi and Yi, 1988).

Reliability is a necessary, but not sufficient, condition for validity. Validity can be assessed in different ways, and in this research, emphasis is placed on the four types outlined in Cronbach and Meehl's (1955) classic article: (1) predictive validity, (2) concurrent validity, (3) content validity, and (4) construct validity. The first two types (predictive and concurrent) are considered criterion-oriented validation procedures, and they are concerned with the degree to which test scores from one test correlate with scores from another test designed to measure the same construct. In this research, only one test of each construct is available, but if these tests are reliable, they are considered an indication of criterion-related validity. One exception is the originality dimension of the creative product concept. For each solution, it is possible to calculate a uniqueness score based on how many of the other participants have suggested the same solution. By calculating the correlation between this score and the score for the originality dimension, a measure of the criterion-related validity for this construct is obtained.

Content validity is concerned with the extent to which the items used to measure a construct belong to the universe of items belonging to the construct. This type of validity must be assessed deductively, and in this research, emphasis is placed on building a conceptually sound argument for the sample of items used to measure creative processing and creative product. Finally, construct validity refers to the degree to which a measure captures the concept it purports to measure (Cook and Campbell, 1979, Cronbach and Meehl, 1955). Construct validation takes place by setting forth

specific testable hypotheses about what should be expected if variations in scores on the measurement instrument reflect true variations in the concept it is supposed to measure. Convergent and discriminant validity are two important parts of construct validation. Convergent validity is the degree to which a measure captures the concept it is supposed to measure. Through confirmatory factor analysis, construct validity is present if (1) the model fits the data reasonably well and (2) factor loadings are significant (Anderson and Gerbing, 1988). Discriminant validity refers to the degree to which measures of one latent variable differ sufficiently from measures of another latent variable. By performing confirmatory factor analysis and calculating the correlations between dimensions, discriminant validity can be assessed by examining these correlations. Strong discriminant validity is achieved when correlations are non-significant. If correlations are significant, discriminant validity can still be achieved if average variance extracted for each latent construct is higher than the squared multiple correlation between constructs (Fornell and Larcker, 1981). Average variance extracted is calculated with the following formula:

$$\rho_v = \left( \sum \lambda^2 \right) / \left[ \left( \sum \lambda^2 \right) + \sum (\theta) \right],$$

where  $\rho_v$  = average variance extracted,

$\lambda$  = indicator loadings, and

$\theta$  = indicator error variances.

Table 4 summarizes the tests of validity performed and specifies criteria for achieving validity:

| <b>Test</b>  | <b>Decision rule</b>   | <b>Measures and concepts tested</b>  |
|--|--|--|
| <b>Test of interjudge reliability:</b><br>To what extent do different judges agree in their assessments of creativity in product and process?      | Reliability is achieved if coefficient alpha > .7.   | Creative product dimensions:<br>Originality, usefulness, and aesthetics<br>Creative process dimension:<br>Bottom-up thinking |
| <b>Test of composite reliability:</b><br>How much of the variation in the observations is explained by the underlying latent variable              | Reliability is achieved if composite reliability > .6.   | All measurement models   |
| <b>Test of convergent validity:</b><br>To what extent does the measure capture the construct to be measured?                                       | Convergent validity is achieved if (a) the model fits data reasonably well, and (b) factor loadings are significant.   | All measurement models   |
| <b>Test of discriminant validity:</b><br>To what extent do measures of one construct differ sufficiently from measures of other latent constructs? | Discriminant validity is achieved if correlations between different latent constructs are non-significant, or if squared multiple correlations between constructs are lower than average variance extracted. | All measurement models   |

*Table 4: Decision rules for evaluating validity*

## 4.5 Methods of analysis

Data were coded in SPSS, and the program was used to calculate descriptive statistics. In addition, SPSS was used to calculate interjudge reliabilities. Consistent with Amabile's (1996) recommendations, interjudge reliability was assessed by calculating coefficient alpha, with the three judges as "items" and one alpha coefficient for each item in the scales. To test the proposed models, the two-step approach that Anderson and Gerbing (1988) recommend was used. By using this approach, the measurement models are first submitted to a test of reliability and validity by applying confirmatory factor analysis. If the measurement models prove reliable and valid, the next step is to test the relationships between the variables by estimating the structural models.

The proposed models were tested in LISREL 8.7. The estimation method was maximum likelihood. In LISREL, goodness-of-fit tests determine whether the model should be rejected or accepted. When a model is accepted as representative of the data, the next step is to examine path coefficients to determine which relationships are significant. If the model does not satisfy criteria for acceptable fit, it is rejected and path coefficients are ignored. Several fit indexes are available (Diamantopoulos and

Siguaw, 2000), and four are reported in this study: chi-square, root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean square residual (SRMR). Model chi-square provides a test of perfect fit in which the null hypothesis specifies that the model fits the population data perfectly. Because rejecting the null hypothesis implies that the model does not fit the data perfectly, conclusions drawn from the chi-square test in LISREL are opposite to those drawn from traditional hypothesis testing: A low chi-square (i.e.,  $p > .01$ ) indicates a high likelihood of “perfect” model fit. Relying on this measure alone is rare because several factors call for caution. The chi-square statistic is sensitive to departure from multivariate normality and sample size. In addition, the test is one of perfect fit—a situation that is unlikely to occur in reality. Therefore, additional measures are used to assess model fit. The RMSEA is a measure of close fit and shows how well the model with unknown parameter values would fit the population covariance matrix if it were available. The CFI is a relative fit index that shows how much better the model fits than a baseline model (usually the independence model, a model assuming that all variables in the model are uncorrelated). Finally, SRMR represents the average difference between the predicted and observed variances and covariances in the model, based on standardized residuals.

When deciding whether to accept or reject a model, Type I (i.e., rejecting a model that should not be rejected) and Type II (i.e., accepting a model that should be rejected) errors should be kept at a minimum. If the chi-square value is low, the model is accepted as good representation of the data. If chi-square is high, combination rules related to the other indexes are applied. Hu and Bentler (1999) found that a cutoff value close to .95 for CFI in combination with an SRMR greater than .09 and a combination rule with a cutoff value of RMSEA greater than .06 in combination with an SRMR greater than .09 resulted in the least sum of Type I and Type II error rates. In smaller samples ( $N < 250$ ), the combination rule using CFI and SRMR is recommended (Hu and Bentler, 1999).

The models presented here propose relationships between creative product and psychological facilitators of creativity and between creative product and creative cognitive processing. These relationships can also be investigated by testing differences in mean levels of knowledge, motivation, self-efficacy, innovativeness, conceptual combination, and bottom-up thinking at different levels of creativity. Although it is expected that testing the models in LISREL should capture linear relationships, they will not be able to detect non-linear relationships or differences at extreme (i.e., very high or very low) levels of creativity. To be able to detect differences in means on the independent variables at three (high, medium, and low) levels of creativity, t-tests for differences in means are performed in SPSS.



## **Chapter 5 Development of measures for creative product assessment**

As noted in Chapter 4, there are no established scales to measure creativity in solutions to consumption problems. This chapter reviews literature on creative assessment techniques and presents the results of a study conducted to develop a scale to assess creativity in solutions to consumption problems. The scale development procedure follows established approaches recommended in marketing literature (Churchill Jr., 1979). First, the domain of the construct must be specified. In Chapter 2, creative product was conceptualized as a formative construct with three dimensions: originality, usefulness, and aesthetics. Second, a sample of items should be generated. A review of literature on creative assessment techniques is presented in section 5.1, followed by a description of item and solution generation in section 5.2. The next two steps that Churchill (1979) recommends are data collection and purification of the measure. These steps are covered in section 5.3. Finally, the purified measure is tested for reliability and validity in section 5.4.

### **5.1 Creative assessment techniques**

Creativity researchers commonly use subjective assessment techniques to determine each response's degree of creativity. As mentioned previously, according to Amabile (1982), a product or response is creative if appropriate observers agree it is creative. Thus, creativity is the quality of products or responses judge to be creative. The following procedure is typically used to assess creativity:

- (1) Participants produce responses to a task (e.g., describe a meal, describe a vacation);
- (2) The responses (the meals described, the vacations described) are the products/solutions that are then judged more or less creative;
- (3) Independent experts rate the degree of creativity in each response; and
- (4) From the experts' assessments, each response is given a "creativity score".

This procedure has proved to be reliable given appropriate scales and real experts as judges. For example, Runco and Charles (1993) found a high correlation between independent judges' subjective assessment and the objective levels of originality and appropriateness.

Amabile (1982) suggests five criteria that must be met in order to use the assessment technique: First, judges should have some experience with the domain in question. Second, judges must make their assessments independently. The assumption underlying use of this technique is that judges

share a subjective standard of creativity against which they judge the products in question. Thus, training them to agree with each other by giving them criteria for creativity in the specific domain in question would violate the assumptions underlying the assessment technique. Third, judges should be asked to give their assessments on additional dimensions other than creativity, especially technical aspects and, if appropriate, aesthetics. This is to examine the degree of the dimensions' (in)dependence in the subjective assessment of the work. Fourth, judges should be instructed to rate the products relative to one another on the dimensions in question. This is important because the issue of interest is the variability in creativity of the responses in the particular study, not creativity compared with the greatest works ever produced in the domain (in which case, most products would score very low on creativity). Fifth, to avoid high levels of interjudge reliability reflecting method bias, each judge should be presented with the products/responses in random order, and they should consider the different dimensions in random order.

## **5.2 Study 1a: Item generation**

This study used the consensual assessment technique described previously, and therefore the critical issue is to use a scale that is both a reliable and a valid measure of creativity in the responses. This scale should enable the judges to assess the responses on all the dimensions relevant for creativity in the domain investigated. According to the literature, creativity is multifaceted, and novelty and appropriateness are the most recognized dimensions. Empirical research on *consumer* creativity is limited. Two recent contributions both used the technique described (Dahl and Moreau, 2002, Burroughs and Mick, 2004). However, the validity and reliability of the scales used is difficult to assess because such assessment was not reported directly and the scale items were not included because of proprietary information.

Many scales have been developed for the purpose of assessing creativity in products/responses. Appendix 1 presents an overview of some of the most relevant scales. Thus, this study uses Besemer and O'Quinn's (1986) original CPSS (creative product semantic scale) but reduces it to arrive at a manageable number of items that could reliably reflect creativity of solutions to consumption problems. That is, the original 70-item scale was reduced to 49 items on the basis of an evaluation of appropriateness for the domain in question. The questions were translated into Norwegian, after which a person knowledgeable in both Norwegian and English back-translated them to ensure correct translation. Appendix 2 shows the 49 items in English and the Norwegian translation.

The 49 items from Besemer and O'Quinn's (1986) scale are adjective poles that reflect opposite descriptions of a solution (e.g., exciting/dull). Thus, a sample of students was asked to rate two

solutions to consumption problems on all 49 items; an exploratory factor analysis was run to purify the measure and to reduce the number of items. Before data collection, the solutions to consumption problems needed to be developed. Thus, a pretest was conducted to identify solutions to consumption problems that would be appropriate to use as objects of creativity assessment. To do so, an expert (i.e., a trained chef) came up with four solutions to the following consumption problem: “What would you serve if you were hosting a dinner party for friends”. Of the four solutions, one was designed to be high on novelty and low on usefulness, one to be high on both novelty and usefulness, one to be high on usefulness and low on novelty, and, finally, one to be low on both novelty and usefulness. The background information was as follows:

*A group of four students were asked to come up with a suggestion of what they would serve friends who came over for dinner. Their stove is really old and cannot be heated above 100 degrees (Celsius). They share the kitchen with 15 other students, and the other students will not like it if they spend too much time cooking. It is the end of the semester and they do not have much money left. Here are the four dinner solutions suggested by the students:*

***Shark Fin Soup:*** *Homemade from the best raw material on the market. Needs to be ordered in advance from a specialty store. Price per person 450 kroner.*

***Sushi:*** *The sushi can be bought “ready to eat” from the fish store down the street. Price per person 95 kroner*

***Pork Roast with sauerkraut:*** *Needs 4–5 hrs in the stove. Price per person 75 kroner*

***Hot Dogs:*** *Quick and easy to make at home. Price per person 35 kroner*

Table 5 provides a classification of these solutions:

|               | Usefulness: High | Usefulness: Low |
|---------------|------------------|-----------------|
| Novelty: High | Sushi            | Shark Fin Soup  |
| Novelty: Low  | Hot Dogs         | Pork Roast      |

*Table 5: Classification of solutions to consumption problems*

The creativity assessment scale contained the 49 items from Besemer and O’Quinn’s (1986) original scale. In addition, respondents were asked to rank the solutions according to novelty and usefulness (Runco and Charles, 1993) and to evaluate the solution on a three-item attractiveness scale. With this procedure, each respondent needed to evaluate 216 items, a large number of questions with corresponding risk of fatigue and low reliability in answers. Therefore, the first round of data collection was conducted among a small number (n = 35) of highly motivated respondents (students with special interests in creativity research). The purpose of this was to reduce the number of

solutions to two solutions representing different scores on the novelty and usefulness dimensions while being easy to evaluate according to the items on Besemer and O'Quinn's scale. These two solutions were then tested on a larger sample in a second study. The questionnaire appears in Appendix 3.

The 35 participants ranked each of the four solutions according to originality and usefulness. The results showed that respondents' rankings were in line with expectations. Mean ranks for novelty was shark fin soup (1,53), sushi (2,00), pork roast (2,87), and hot dog (3,6). Mean ranks for usefulness was hot dog (1,13), sushi (2,13), pork roast (3,00), and shark fin soup (3,73).

To determine which solutions to use in a second study, all four were tested for scale reliabilities (coefficient alpha) on the 10 dimension, 49-item scale derived from Besemer and O'Quinn (1986). Coefficient alpha is a measure of the intercorrelations among a set of items. If the items in a scale belong to the domain of the same concept, they will have high intercorrelation (Churchill, 1979). A rule of thumb is that for early stages of basic research, coefficient alphas of .50–.60 are acceptable, and for established scales, alphas of .7 or higher (Nunnally and Bernstein, 1967) are acceptable. Table 6 presents the results from the reliability test:

| Scale          | Shark Fin Soup | Sushi | Pork Roast | Hot Dog |
|----------------|----------------|-------|------------|---------|
| Original       | .73            | .72   | .84        | .60     |
| Surprising     | .46            | .71   | .84        | .36     |
| Geminal        | .48            | .74   | .86        | .69     |
| Valuable       | .46            | .44   | .76        | .74     |
| Logical        | .79            | .69   | .84        | .69     |
| Useful         | .67            | .77   | .77        | .35     |
| Organic        | .63            | .61   | .88        | .32     |
| Elegant        | .79            | .88   | .95        | .64     |
| Understandable | .61            | .56   | .77        | .57     |
| Well-crafted   | .66            | .33   | .78        | .07     |

*Table 6: Coefficient alphas for the four solutions on Besemer and O'Quinn's (1986) dimensions*

The reliability coefficients in Table 5 suggest that participants evaluated pork roast (all scales are reliable according to the .7 criterion) and sushi (5 of 10 are reliable) more in line with Besemer and O'Quinn's proposed dimensions than shark fin soup (three reliable scales) and hot dog (none of the scales satisfy the .7 criterion). Because pork roast and sushi also represent opposites on the two creativity measures (novelty and usefulness), they were kept as the two solutions for creativity assessment.

### **5.3 Study 1b: Purification of measure**

The instrument was identical to Study 1a, except this time the respondents evaluated only two solutions (sushi and pork roast). A sample of 107 students responded to the creativity assessment scale for each of the two solutions. Figure 18 shows respondents' ranking of originality and usefulness: 91 of the 107 respondents ranked sushi as the most novel solution, and 98 of the 107 respondents ranked sushi as the most useful solution.

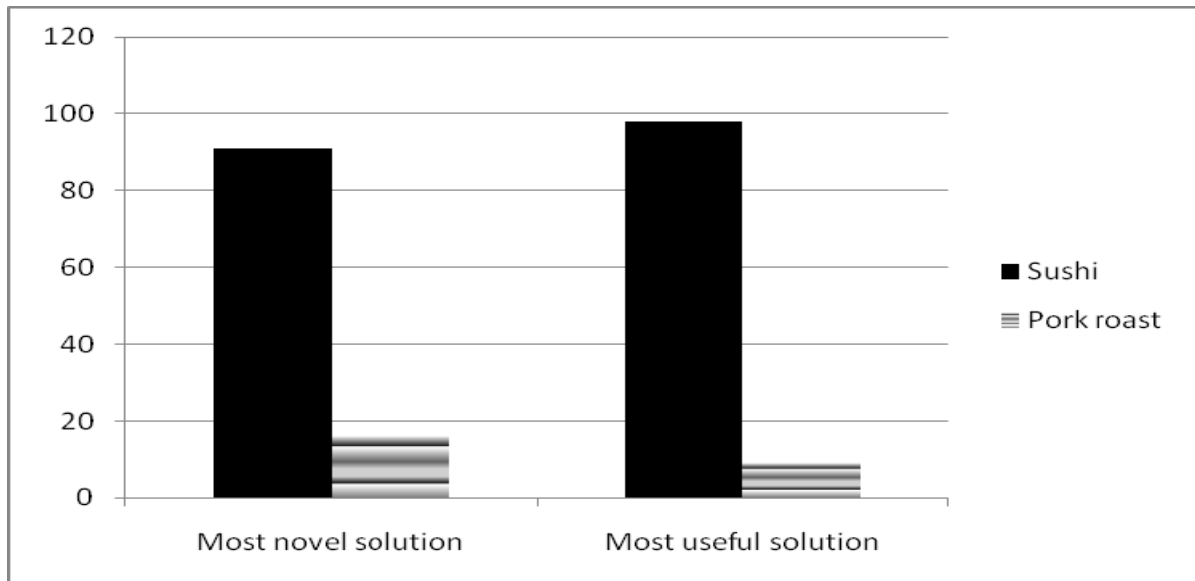


Figure 18: Ranking of solutions on originality and usefulness

From these results, it was concluded that the respondents had associated the solutions according to how they were designed.

The purpose of the study was to reduce Besemer and O’Quinn’s (1986) scale to a more manageable number of items that would still reflect the different aspects of creativity (Burroughs et al., 2008): originality, usefulness and aesthetics. To do this, the data set was split in two: One set contained creativity assessment of the sushi solution, and the other set contained the creativity assessment of the pork roast solution. The pork roast solution was first analyzed and then subjected to an exploratory factor analysis in which items with cross-loadings and/or loadings lower than .55 were deleted one at the time until a subset of eight items remained. Table 7 summarizes the factor loadings for the eight remaining items:

|                        | 1      | 2      | 3      |
|------------------------|--------|--------|--------|
| Exciting/Dull          | .810   |        |        |
| Fresh/Overused         | .793   |        |        |
| Novel/Predictable      | .843   |        |        |
| Effective/Ineffective  |        | .809   |        |
| Feasible/Unfeasible    |        | .802   |        |
| Workable/Unworkable    |        | .781   |        |
| Orderly/Disorderly     |        |        | .895   |
| Organized/Disorganized |        |        | .917   |
| Eigenvalues            | 2.63   | 2.10   | 1.46   |
| Variance explained     | 26.29% | 20.99% | 14.57% |
| Coefficient alpha      | .75    | .71    | .81    |

Table 7: Factor solution to creative product assessment scale<sup>5</sup>

<sup>5</sup> Principal component analysis, oblimin with Kaiser normalization. Solution converged in five iterations.

Table 7 shows a clean factor structure, and the coefficient alphas for all scales satisfy the .6 criterion for scales that are under development (Nunnally 1967). The items loading on the first factor all belong to what Besemer and O’Quinn called the “original dimension”, the items loading on the second factor belong to the “useful dimension”, the items loading on the third factor are from the “organic dimension”. The three factors fit well with Burroughs et al.’s conceptualization of creative solutions to consumption problems as a three-dimensional construct comprising novelty, usefulness, and aesthetics.

The model used to purify the measure in this research can be classified as a domain sampling model. The domain sampling model holds that the purpose of a measure is to estimate the true score, or the score that would have been obtained if all the items in the domain were used (Nunnally, 1967). In this case, Besemer and O’Quinn’s (1966) scale was reduced from the original 49 to a scale of eight items. In addition, the scale is just a subset of *all* the items in the domain. According to Churchill (1979, p. 68), “a primary source of measurement error is the inadequate sampling of the domain of relevant items”. In this case, inadequate sampling should be reflected in low correlations between the original scale and the reduced scale. Therefore, a correlation analysis was performed to examine correlations between Besemer and O’Quinn’s originality, usefulness, and organic (called “aesthetic” herein) dimensions and measures based on the reduced scale. In addition, the correlation between a creativity measure based on the sum of all the items in the original scale and a measure based on the sum of the eight items in the reduced scale was calculated. Table 8 presents the results.

| Scale     | Correlation coefficient |
|-----------|-------------------------|
| Original  | .87                     |
| Useful    | .95                     |
| Aesthetic | .57                     |
| Creative  | .82                     |

*Table 8: Correlations between original and reduced scales<sup>6</sup>*

Table 8 shows that the reduced scale is a good reflection of the original scale, with correlations ranging from .57 to .95.

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<sup>6</sup> All coefficients are significant at the  $p < .01$  level.

## 5.4 Reliability and validity assessment

A critical question in scale development is whether the instrument really measures what it is intended to measure. This is called “construct validity” and can be assessed by (1) convergent validity, or the extent to which the measure correlates with other measures designed to measure the same thing, and (2) discriminant validity, or the extent to which a measure does not correlate too highly with measures from which it is supposed to differ. To test the construct validity of the reduced scale, confirmatory factor analysis in LISREL 8.7 (Jöreskog and Sörbom, 2004) was performed on the sushi data. Figure 19 presents the measurement model:

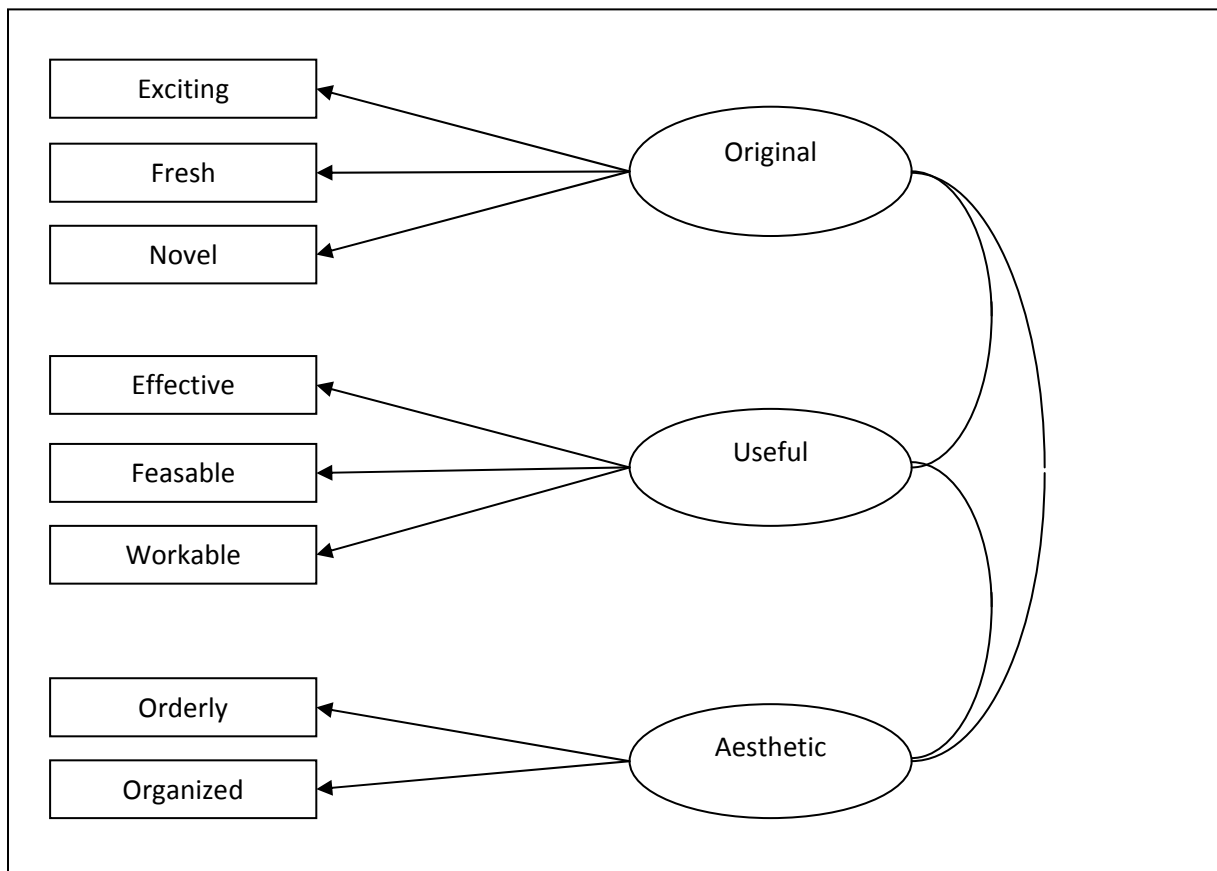


Figure 19: Measurement model for the reduced creative product assessment scale

The model presented in Figure 19 was estimated in LISREL VII. Table 9 presents the fit indexes:

| Model                               | Goodness of fit   |
|-------------------------------------|---|
| Three factor creative product model | chi-square = 25.31 (df = 17), $p = 0.0879$<br>RMSEA = 0.068<br>CFI = 0.97<br>SRMR = 0.057 |

Table 9: Fit indexes for the three-dimensional creative product assessment model

Table 9 shows that the model fits the data well. Table 10 provides the item reliability, average variance extracted, and composite reliability:



| Items     | Standardized factor loading | Item reliability | Average variance extracted |
|-----------|-----------------------------|------------------|----------------------------|
| Exciting  | 0.77                        | 0.60             | 0.49                       |
| Fresh     | 0.79                        | 0.62             |                            |
| Novel     | 0.51                        | 0.26             |                            |
| Effective | 0.75                        | 0.56             | 0.45                       |
| Feasible  | 0.74                        | 0.55             |                            |
| Workable  | 0.50                        | 0.25             |                            |
| Orderly   | 0.77                        | 0.59             | 0.59                       |
| Organized | 0.77                        | 0.59             |                            |

*Table 10: Standardized factor loadings, item reliability, and average variance extracted for the three-dimensional creative product assessment model*

Construct validity can be assessed by inspecting convergent and discriminant validity. Consistent with Anderson and Gerbing (1988), convergent validity was assessed by examining factor loadings and model fit. All the factor loadings were significant. The fit indexes suggest that the model fits the data well. Reliability is assessed by examining composite reliability which should exceed 0.6 (Bagozzi and Yi, 1988). Table 11 provides the composite reliability, correlations, and squared correlations among the constructs:

|           | Original | Useful | Aesthetic |
|-----------|----------|--------|-----------|
| Original  | 0.74     | 0.24   | 0.18      |
| Useful    | 0.49     | 0.71   | 0.44      |
| Aesthetic | 0.43     | 0.66   | 0.75      |

*Table 11: Correlations<sup>7</sup>, composite reliability, and squared correlations<sup>8</sup> among the three creative product dimensions*

The measures of composite reliability presented in Table 11 show satisfactory results for all three dimensions. To assess discriminant validity, the correlations among the factors were examined. The squared multiple correlations are lower than the average variance extracted.

Thus, it can be concluded that the results support an eight-item, three-factor measure of the creative product. This scale is used to assess creativity in the solutions to the consumption problems in the main study.

<sup>7</sup> All correlations are significant at the  $p < .01$  level.

<sup>8</sup> Composite reliability are on the diagonal, correlations are to the left of the diagonal, and squared correlations are to the right of the diagonal.



## **Chapter 6. Results**

The data collection returned 258 responses, some of which were dropped from analysis because of missing responses to the scenarios. A total of 245 usable responses were retained for further analysis. The questionnaire appears in Appendix 4. Different groups of judges (three in each group) assessed creativity in solution and creativity in the thought protocols. Appendix 5 provides descriptive statistics and missing values for the complete set of items. Non-normality or missing values did not seem to be a problem, and all variables were retained. Thus, a listwise deletion of missing values was used.

As outlined in Chapter 4, the judges' scores on the items developed to assess creative product and the bottom-up dimension of creative processing is analyzed to assess interjudge reliability. Then all measurement models are analyzed to assess reliability and construct validity. Construct validity is examined by investigating convergent and discriminant validity. This chapter is organized as follows: Section 6.1 gives a presentation of results to the scenarios, and interjudge reliabilities for creativity assessments are presented and discussed. Chapter 6.2 presents analysis of reliability and validity for the creative ability model, Chapter 6.3 for the creative processing model, and Chapter 6.4 for the creative product model. Finally, presentation of descriptive statistics and missing values for the items that were retained for further analysis appears in Chapter 6.5.

### **6.1 Responses to scenarios and thought protocols**

The solutions were analyzed to assess their creativity. Each solution was placed in a category that reflected the main ingredients in the suggestion (e.g., "grilled fish with baked potatoes and carrots" was placed in the "Fish" category). This was done to calculate a uniqueness score based on how many of the other participants had suggested the same solution. This uniqueness score allows for a validation of scores on creative product and, in particular, on the originality dimension. Significant correlations between this uniqueness score and the creative product and originality scores are expected. The categorization of solutions resulted in 47 different categories of solutions, of which taco was the most common (suggested by 45 participants), followed by chicken (31 participants) and pasta (21 participants). The most unique solutions were the ones suggested by only one participant. Here, 26 participants came up with a unique solution (e.g., moose, cookies, moussaka, paella). Appendix 6 provides a complete list of the categories of solutions and the number of suggestions in each.

The solutions varied to a great extent in terms of detail and originality. To illustrate, two examples of the solutions are as follows:

Example 1:

*When my guests arrive, they will get a glass of wine and then everyone will contribute to preparing dinner. Before they arrive, I have decided on the menu, prepared recipes and ingredients. One group will be responsible for the appetizer, one for the entree and one for dessert. The dessert will be made from berries I have picked in the forest along with a homemade vanilla sauce. The appetizer will be a home-baked bread which is grilled with herbs from my garden, and homemade pesto. The entree is grilled lamb with garlic, grilled potatoes with garlic, sauce, and fresh vegetables.*

Example 2:

*Taco!*

Three independent judges scored the solutions to the dinner problem on the eight-item creative consumption product assessment scale developed for this purpose. Appendix 7 provides the questionnaire judges answered. Then, correspondence in the three judges' assessments were examined by calculating coefficient alpha, with each judge's score on each item as items in the scale. As outlined in Chapter 4, reliability is achieved if coefficient alpha exceeds .7. Table 12 presents coefficient alphas for the creative product items.

| Item      | Coefficient alpha |
|-----------|-------------------|
| Exciting  | .73               |
| Fresh     | .78               |
| Novel     | .82               |
| Effective | .88               |
| Feasible  | .79               |
| Workable  | .85               |
| Orderly   | .72               |
| Organized | .75               |

*Table 12: Interjudge reliabilities for creative product assessment*

Table 12 shows that interjudge reliabilities for all eight items exceeded the .7 limit. Therefore, the three judges' scores on each item were added to form one indicator of each item in the analysis. There are two sources of information regarding originality: the uniqueness score calculated on the basis of how many participants had suggested similar solutions and the sum of scores on the three originality items (i.e., "exciting", "fresh", and "novel"; coefficient alpha = .96). The Pearson correlation coefficient between the two measures was .60 ( $p < .01$ ). Because the two tests significantly correlate, criterion related validity is achieved for the originality measures.

The thought protocols were also analyzed to determine degree of creative processing. As discussed previously, the creative processing construct was operationalized as two dimensional: one dimension called “conceptual combination” to reflect the number and uniqueness of categories that had been considered during decision making and one named bottom-up thinking to reflect the extent to which bottom-up thinking had been used during decision making. To obtain scores for conceptual combination, a list of categories was developed on the basis of the content of the protocols. For example, if a person said “I was thinking about something that was cheap and easy to make”, he or she would be scored in the categories “price” and “easy to make”. Two researchers developed the categories and scored each protocol; the results were compared, and disagreements were solved by discussion. Table 13 provides the list of categories and the number of observation in each category:

| Category   | Number of observations |
|--|------------------------|
| Price  | 142                    |
| Easy to make   | 132                    |
| Own preferences  | 123                    |
| Healthy  | 54                     |
| Own experience   | 47                     |
| Guests’ preferences                                    | 43                     |
| Make an impression                                     | 35                     |
| Take the opportunity to create good experiences        | 22                     |
| Do something different                                 | 17                     |
| Create a specific atmosphere (formal/informal, social) | 8                      |

Table 13: Categories participants considered during decision making

A total of 10 different categories were considered. Each thought protocol received a score based on (1) the number of categories considered and (2) a uniqueness score pertaining to how many other participants had considered the same category (e.g., “Create a specific atmosphere” received a score of 10, while “Price” received a score of 1). The average number of categories was 2.58, and the average uniqueness score 9.13. As with solutions, thought protocols demonstrated large variations in creativity. The following two examples illustrate this:

Example 1:

*I wanted to use ingredients I can harvest from nature, and since I am both a chef and a hunter, it is important for me to use what nature can offer. I wanted something cheap that can be combined with a social activity; I wanted to do something that involved being outside in fresh air.*

Example 2:

*Had it yesterday!*

To provide scores on bottom-up thinking, three independent judges coded participants' thought protocols. The judges rated each thought protocol on two seven-point scales: one measuring the extent to which the participant seemed to have thought of the solution before attributes (top-down thinking) and one measuring the extent to which attributes had been considered before a solution came to mind (bottom-up thinking). Appendix 8 provides the questions judges answered. The top-down thinking scores were reversed so that higher values indicate more creative processing. Table 14 presents the interjudge reliabilities for the bottom-up thinking scale:

| Item               | Coefficient alpha |
|--------------------|-------------------|
| Bottom-up thinking | .91               |
| Top-down thinking  | .91               |

*Table 14: Interjudge reliabilities for creative cognitive processing assessment*

All the interjudge reliabilities for creative processing were above the .7 limit. Consistent with previous research practice, the judges' scores on each item were summed to form one indicator for each item in the subsequent analyses.

## **6.2 Validation of psychological facilitators of creativity model**

The psychological facilitators of creativity model with four dimensions and 35 items were tested by applying confirmatory factor analysis. The original 35-item model showed poor fit. Modification indexes in LISREL suggested high correlations between the error terms for many of the items, and different dimensions loaded on items assumed to represent other dimensions. After a process of deleting items that cross-loaded and had error terms correlated with the error terms of other items, a 10-item model was retained. Table 15 lists the goodness-of-fit indexes for the original 35-item model and the reduced 10-item model.

| <b>Model</b>   | <b>Goodness of fit</b>  |
|--|---|
| Four-factor psychological facilitators of creativity model with 35 items | chi-square = 2460.84 (df = 554), $p = 0.0000$<br>RMSEA = 0.119<br>CFI = 0.77<br>SRMR = 0.10 |
| Four-factor psychological facilitators of creativity model with 10 items | chi-square = 33.08 (df=29), $p = 0.2746$<br>RMSEA = 0.024<br>CFI = 0.99<br>SRMR = 0.040     |

*Table 15: Goodness-of-fit indexes for the 35-item and 12-item psychological facilitators of creativity models*

As outlined in Chapter 4, convergent and discriminant validity and composite reliability are tested by examining the factor loadings and error variances of the measurement model. Table 16 presents the results from the confirmatory factor analysis:

| <b>Items</b>    | <b>Standardized factor loading</b> | <b>Item reliability</b> | <b>Average variance extracted</b> |
|-----------------|------------------------------------|-------------------------|-----------------------------------|
| Knowledge1      | 0.85                               | 0.70                    | 0.73                              |
| Knowledge2      | 0.95                               | 0.93                    |                                   |
| Knowledge3      | 0.75                               | 0.55                    |                                   |
| Motivation1     | 0.80                               | 0.64                    | 0.46                              |
| Motivation2     | 0.52                               | 0.27                    |                                   |
| Efficacy1       | 0.77                               | 0.59                    | 0.46                              |
| Efficacy2       | 0.58                               | 0.33                    |                                   |
| Innovativeness1 | 0.52                               | 0.27                    | 0.56                              |
| Innovativeness2 | 0.67                               | 0.44                    |                                   |
| Innovativeness3 | 0.98                               | 0.97                    |                                   |

*Table 16: Factor loadings, item reliability, and average variance extracted for the psychological facilitators of creativity model*

Construct validity was assessed by examining convergent and discriminant validity. The model satisfied criteria for convergent validity because all the factor loadings were high and significant and the fit indexes suggest that the model fits the data well (e.g., chi-square = 33.08, df = 28,  $p > .01$ ). To assess discriminant validity, the correlations between the dimensions were examined. Table 20 presents the correlations and squared correlations between dimensions as well as composite reliability coefficients.

|                | <b>Knowledge</b> | <b>Motivation</b> | <b>Efficacy</b> | <b>Innovativeness</b> |
|----------------|------------------|-------------------|-----------------|-----------------------|
| Knowledge      | .89              | .05               | .26             | .03                   |
| Motivation     | .23              | .61               | .09             | .12                   |
| Efficacy       | .51              | .30               | .63             | .04                   |
| Innovativeness | .17              | .35               | .19             | .78                   |

*Table 17: Correlations<sup>9</sup>, squared correlations, and composite reliability for dimensions of psychological facilitators of creativity<sup>10</sup>*

All factors satisfy the 0.6 criterion for composite reliability. Although some of the correlations are relatively high, discriminant validity is achieved because variances extracted for each of the latent constructs are higher than the squared correlations between the constructs. Thus, it can be concluded that the psychological facilitators of creativity model satisfies all criteria for reliability and validity outlined in Chapter 4.

### **6.3 Validation of the Creative Processing Model**

Participants' thought protocols were coded according to the degree of conceptual combination and bottom-up thinking. Bottom-up thinking was measured by having independent judges read each thought protocol and assess the degree of bottom-up thinking, and conceptual combination was measured by counting the number of categories the participants had considered during decision making and assigning a uniqueness score to each participant according to the number of other participants who had considered an element in the same category. An independent judge validated the coding, and any disagreements were solved by discussion. Then, the two-dimensional model was tested using confirmatory factor analysis in LISREL 8.7. The analysis yielded results indicating improper solutions. Improper solutions refer to sample estimates with values that would be impossible in the population. In this case, the standardized factor loadings for the "number of categories" item and the "top-down thinking" item were greater than 1, and corresponding error variances were negative. Several factors can cause improper solutions (Bollen, 1989). If the population error variance is close to zero, the improper value in the sample may be due to sampling fluctuations. This possibility can be tested by checking whether the sample estimates differ statistically from an acceptable population parameter. This was done by fixing the two error

<sup>9</sup> All correlations are significant at the  $p < .01$  level.

<sup>10</sup> Correlation coefficients are to the left of the diagonal, composite reliabilities are on the diagonal, and squared correlations are to the right of the diagonal.



variances to zero and re-estimating the model. If the model with the fixed error variances fits the data equally well or better, this can be considered an indication that the improper values are due to sampling fluctuations. In this case, the original model had a chi-square value of 2.54 with 1 degree of freedom. The model with the error variances fixed to zero had a poorer fit (chi-square 6.57 with 3 degrees of freedom). Because the new model did not fit the data better (a negative chi-square change of 4.03 with 2 degrees of freedom;  $p < .05$ ), other explanations to the improper solution were examined. Bollen (1989) maintains that outliers may lead to distorted measures of associations for the observed variables, which in turn may affect the parameter estimates. Thus, a scatterplot was used to detect potential outliers of the conceptual combination dimension. Inspection of the scatterplot revealed that 11 observations had unusual combinations of values. Five were high on uniqueness and low on the number of categories; such a situation occurs when a person has considered one or two highly unusual categories and nothing else. Six participants had considered only the most common category and nothing else. Because there were few missing observations to begin with, these outliers were removed to determine whether this would solve the problem with the improper solutions. A new confirmatory factor analysis showed that the problem with the top-down variable had been solved, but the category variable still had negative error variance. Again, the improper solution was checked to determine whether it was due to sampling fluctuations by fixing the error variance of the category variable to zero and comparing the fit of the two models. This time, the model with the error variance fixed to zero did not differ from the other model ( $\Delta\chi^2 = 1.18$ ,  $df = 1$ , not significant). The model based on the data with removed outliers and error variance of the item “categories” fixed to zero is evaluated according to these criteria.

| <b>Model</b>                         | <b>Goodness of fit</b>  |
|--------------------------------------|---|
| Two-factor creative processing model | chi-square = 1.19 (df = 2), $p = 0.5525$<br>RMSEA = 0.000<br>CFI = 1.00<br>SRMR = 0.019 |

*Table 18: Fit indexes for the creative cognitive processing model*

Table 18 shows that the model fits the data well (chi-square = 1.19,  $df = 2$ ,  $p > .01$ ). To address reliability and construct validity, standardized factor loadings, item reliability, and average variance extracted was examined. Table 19 presents the results:

| Items              | Standardized factor loading | Item reliability | Average variance extracted | Composite reliability |
|--------------------|-----------------------------|------------------|----------------------------|-----------------------|
| Categories         | 1.00                        | 1.00             | 0.80                       | 0.89                  |
| Uniqueness         | 0.78                        | 0.60             |                            |                       |
| Bottom-up thinking | 0.96                        | 0.92             | 0.94                       | 0.97                  |
| Top-down thinking  | 0.98                        | 0.96             |                            |                       |

Table 19: Factor loadings, item reliability, and average variance extracted for the creative cognitive processing model

Construct validity was assessed by examining convergent and discriminant validity. It was concluded that the model satisfied criteria for convergent validity because all the factor loadings were high and significant and the fit indexes suggest that the model fits the data well. To assess discriminant validity, correlations, squared correlations, and composite reliability was computed. Table 20 presents the results:

|                        | Conceptual combination | Bottom-up thinking |
|------------------------|------------------------|--------------------|
| Conceptual combination | .89                    | .02                |
| Bottom-up thinking     | .15                    | .97                |

Table 20: Correlation, composite reliability, and squared correlation for creative cognitive processing dimensions<sup>11</sup>

Table 20 shows that all factors satisfy the 0.6 criterion for composite reliability. The correlation between conceptual combination and bottom-up thinking was .15 ( $p < .01$ ), and the squared correlation was .02. Because the average variance extracted for both dimensions are higher than the squared multiple correlation between dimensions, discriminant validity is achieved. Therefore, it can be concluded that the creative processing model satisfies all criteria for reliability and validity outlined in Chapter 4.

## 6.4 Validity of Creative Product Model

The creative product model with three dimensions and eight items was tested by applying confirmatory factor analysis. Table 21 provides the goodness-of-fit indexes.

<sup>11</sup> The correlation is to the left of the diagonal, the composite reliability is on the diagonal, and the squared correlation is to the right of the diagonal.

| Model   | Goodness of fit   |
|---|---|
| Three- factor creative product model with eight items | chi-square = 21.93 (df = 17), $p = 0.1875$<br>RMSEA = 0.034<br>CFI = 0.99<br>SRMR = 0.022 |

Table 21: Fit indexes for the creative product model

Table 21 shows that the model fits the data well. As outlined in Chapter 4, convergent and discriminant validity are tested by examining the factor loadings and error variances of the measurement model. Table 22 provides the results from the confirmatory factor analysis:

| Items                         | Standardized factor loading | Item reliability | Average variance extracted |
|-------------------------------|-----------------------------|------------------|----------------------------|
| <b>Originality dimension:</b> |                             |                  | 0.90                       |
| Exciting                      | 0.94                        | 0.89             |                            |
| Fresh                         | 0.98                        | 0.96             |                            |
| Novel                         | 0.92                        | 0.85             |                            |
| <b>Usefulness dimension:</b>  |                             |                  | 0.70                       |
| Effective                     | 0.77                        | 0.60             |                            |
| Feasible                      | 0.92                        | 0.84             |                            |
| Workable                      | 0.81                        | 0.66             |                            |
| <b>Aesthetics dimension</b>   |                             |                  | 0.61                       |
| Orderly                       | 0.70                        | 0.48             |                            |
| Organized                     | 0.86                        | 0.74             |                            |

Table 22: Factor loadings, item reliability, and average variance extracted for the creative product model

It was concluded that the model satisfied the criteria for convergent validity because all the factor loadings were high and significant and the fit indexes in Table 21 suggest that the model fits the data well. To assess discriminant validity, the correlations among the factors, composite reliability, and squared correlations were examined. Table 23 provides the results.

|             | Originality | Usefulness | Aesthetics |
|-------------|-------------|------------|------------|
| Originality | .96         | .00        | .06        |
| Usefulness  | .01         | .87        | .03        |
| Aesthetics  | .25*        | .18*       | .76        |

Table 23: Correlations, composite reliability, and squared correlations for creative product dimensions<sup>12</sup>

<sup>12</sup> Correlations are to the left of the diagonal, composite reliabilities are on the diagonal, and squared correlations are to the right of the diagonal.

All the factors satisfy the 0.6 criterion for composite reliability. Although some of the correlations are relatively high, discriminant validity is achieved because variances extracted for each of the latent constructs are higher than the squared correlations between the constructs. Thus, it can be concluded that the creative product model satisfies all criteria for reliability and validity outlined in Chapter 4.

## 6.5 Descriptive statistics and missing values

Table 24 presents an overview of the descriptive statistics and missing values for the items used in the final measurement models (i.e., the items that were retained after the validation analysis):

| Item                  | Mean  | Std.dev. | Skew-ness | Kurtosis | N   | Missing |
|-----------------------|-------|----------|-----------|----------|-----|---------|
| Originality1          | 11.28 | 3.60     | .256      | -.303    | 243 | 2       |
| Originality2          | 11.62 | 3.93     | .131      | -.633    | 243 | 2       |
| Originality3          | 10.28 | 4.88     | .336      | -.999    | 243 | 2       |
| Usefulness1           | 15.18 | 2.54     | -.806     | 2.598    | 245 | 0       |
| Usefulness2           | 17.61 | 2.52     | -1.260    | 2.996    | 245 | 0       |
| Usefulness3           | 18.01 | 2.80     | -1.224    | 1.995    | 245 | 0       |
| Aesthetics1           | 18.40 | 2.22     | -1.515    | 4.271    | 245 | 0       |
| Aesthetics2           | 18.03 | 2.68     | -1.872    | 5.801    | 245 | 0       |
| Categories            | 2.58  | 1.08     | .204      | -.557    | 232 | 13      |
| Unique                | 9.13  | 5.39     | .940      | 1.090    | 232 | 13      |
| BU thinking           | 11.52 | 5.22     | .103      | -1.201   | 233 | 12      |
| TD thinking           | 11.41 | 4.97     | .141      | -.967    | 233 | 12      |
| Knowledge1            | 4.49  | 1.27     | -.224     | -.061    | 245 | 0       |
| Knowledge2            | 4.42  | 1.33     | -.172     | -.013    | 243 | 2       |
| Knowledge3            | 4.52  | 1.22     | -.217     | .333     | 242 | 3       |
| Motivation1           | 3.90  | 1.72     | -.155     | -.688    | 228 | 17      |
| Motivation2           | 5.62  | 1.48     | -1.101    | .833     | 236 | 9       |
| Efficacy1             | 5.83  | 1.33     | -.938     | -.197    | 244 | 1       |
| Efficacy2             | 6.14  | 1.25     | -1.564    | 2.108    | 235 | 10      |
| Innovativeness1       | 3.57  | 0.90     | -.335     | -.336    | 242 | 3       |
| Innovativeness2       | 3.48  | 1.01     | -.198     | -.740    | 243 | 2       |
| Innovativeness3       | 3.89  | 0.92     | -.631     | .106     | 243 | 2       |
| Solution evaluation 1 | 5.04  | 1.44     | -.298     | -.602    | 243 | 2       |
| Solution evaluation 2 | 5.49  | 1.53     | -.989     | .446     | 241 | 4       |
| Solution evaluation 3 | 6.16  | 6.16     | -1.765    | 2.866    | 240 | 5       |

Table 24: Descriptive statistics and missing values

As Table 24 shows, some of the variables have Kurtosis values greater than 2. Although this may be a problem when estimating the models in LISREL, maximum likelihood estimation is robust under conditions of non-normality (Olsson et al., 2000). Missing values do not appear to be a problem, and thus cases with missing values were deleted. There are two ways to do this in LISREL, listwise deletion or pairwise deletion. In listwise deletion, a case with missing value is ignored in all

calculations. In pairwise deletion, a case is ignored only for calculations involving that variable. Because several missing values are small in this sample, listwise deletion of missing values was used. The total effective sample size after deletion of missing values was 191.

## 6.6 Correlation between constructs

Pearson correlation coefficient was calculated between all the constructs in the study. Table 25 presents the results of this analysis:

|                                     | Know-<br>ledge | Moti-<br>vation | Self-<br>efficacy | Innova-<br>tiveness | Con-<br>ceptual<br>com-<br>bination | Bottom-<br>up<br>thinking | Origi-<br>nality | Use-<br>fulness | Aes-<br>thetics | Crea-<br>tivity |
|-------------------------------------|----------------|-----------------|-------------------|---------------------|-------------------------------------|---------------------------|------------------|-----------------|-----------------|-----------------|
| Know-<br>ledge                      | 1              |                 |                   |                     |                                     |                           |                  |                 |                 |                 |
| Moti-<br>vation                     | .172***        | 1               |                   |                     |                                     |                           |                  |                 |                 |                 |
| Self-<br>efficacy                   | .240***        | .150**          | 1                 |                     |                                     |                           |                  |                 |                 |                 |
| Innova-<br>tiveness                 | .182***        | .204***         | .158**            | 1                   |                                     |                           |                  |                 |                 |                 |
| Con-<br>ceptual<br>com-<br>bination | .041           | .127*           | -.003             | .112*               | 1                                   |                           |                  |                 |                 |                 |
| Bottom-<br>up<br>thinking           | .194***        | .092            | .052              | .074                | .086                                | 1                         |                  |                 |                 |                 |
| Origi-<br>nality                    | .270***        | .097            | .081              | .061                | .094                                | .127*                     | 1                |                 |                 |                 |
| Use-<br>fulness                     | -.145**        | -.122*          | -.032             | -.014               | .073                                | -.134**                   | -.054            | 1               |                 |                 |
| Aes-<br>thetics                     | -.025          | -.101           | -.038             | -.007               | .022                                | -.161**                   | .228***          | .226***         | 1               |                 |
| Crea-<br>tivity                     | .170***        | -.011           | .047              | .030                | .116*                               | -.001                     | .830***          | .445***         | .534***         | 1               |
| Evalu-<br>ation                     | .228***        | .169**          | .169**            | .161**              | .209***                             | -.078                     | .187***          | .166**          | .229***         | .280***         |

Table 25: Correlations between constructs<sup>13</sup>

As Table 25 shows, knowledge correlates with all creative product and creative processing dimensions except two (conceptual combination and aesthetics). All correlations except that with usefulness are positive. Motivation has a significant, positive correlation with conceptual combination and a significant, negative relationship to usefulness. Self-efficacy does not correlate significantly with any creativity dimension, and innovativeness correlates positively with conceptual combination. Bottom-up thinking has a positive correlation with originality and a negative correlation with usefulness and aesthetics. Finally, conceptual combination correlates only with the creativity indicator.

<sup>13</sup> Note: \* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .



## **Chapter 7 Model estimation and results**

In Chapter 2, a conceptual model of consumer creativity was developed. Within this framework, nine models with proposed relationships between the constructs were developed and presented in Chapter 3. Chapter 6 presented validations of the structure models. All models satisfy criteria for validity and reliability, and thus the structure models presented in Chapter 3 are now tested. These tests are presented in five sections, as illustrated in Figure 20:

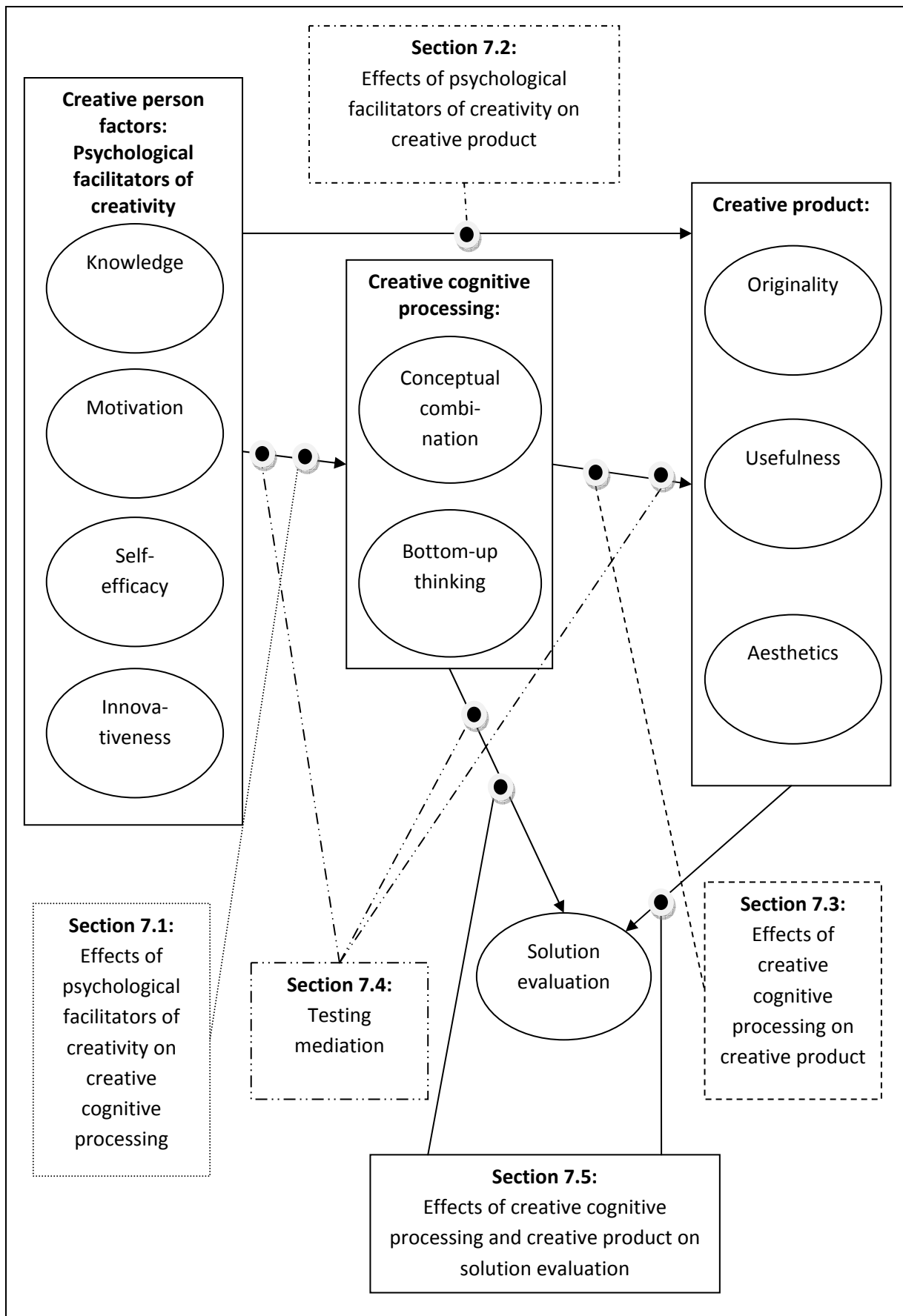


Figure 20: Overview of structural models



When testing the models, fit indexes are evaluated according to Hu and Bentler's (1999) recommendations (reported in Chapter 4). That is, a model is accepted as a good representation of the data if the chi-square value is low enough to yield  $p > .01$ . In addition, two combination rules are applied: a value close to .95 for CFI in combination with SRMR  $> .09$  and an RMSEA  $> .06$  in combination with SRMR  $> .09$ . If neither of these rules is satisfied, the model will be rejected and the path coefficients will not be discussed. Path coefficients are considered significant at the  $p < .1$  level<sup>14</sup>.

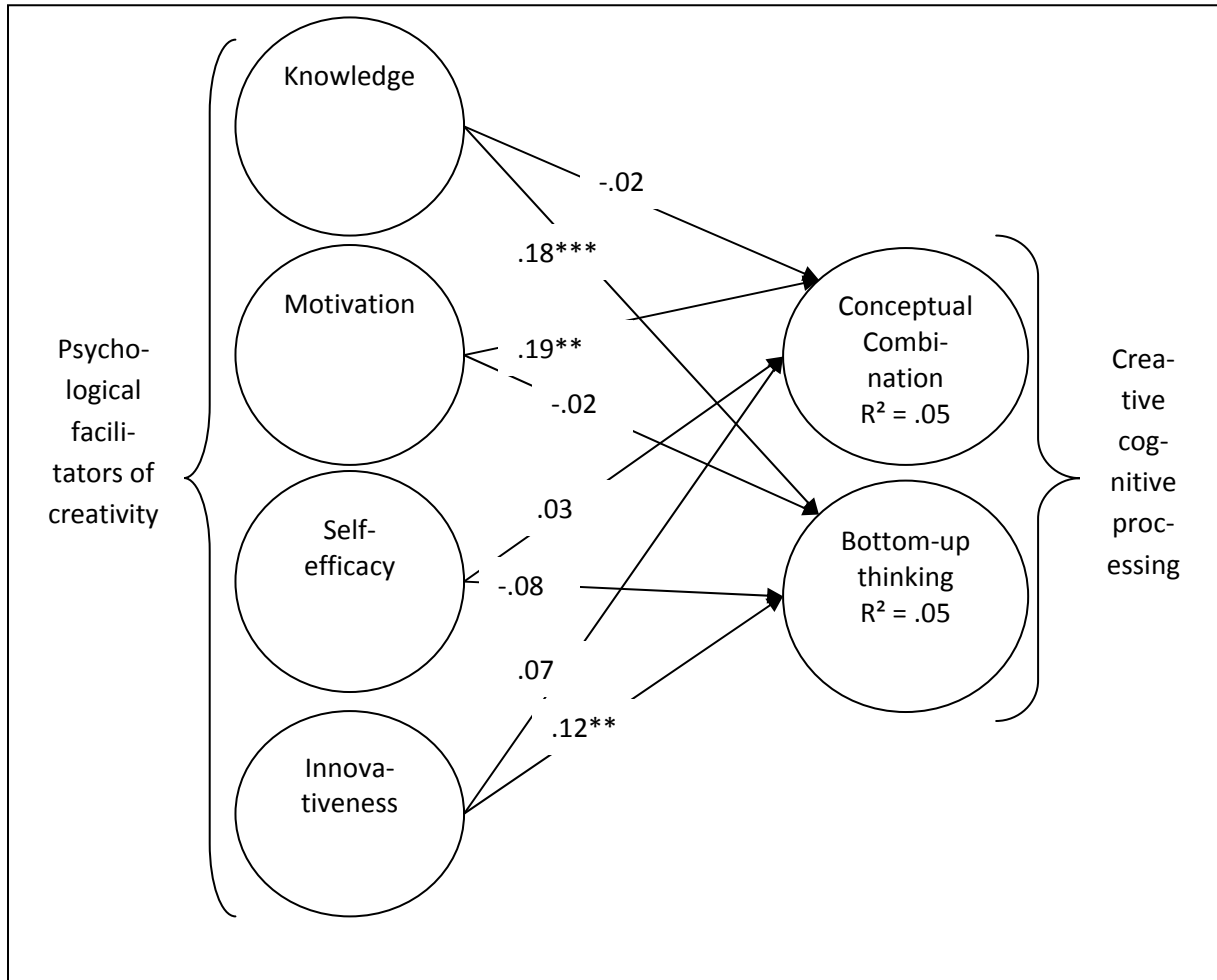
This chapter is organized according to the sections presented in Figure 21. In addition, t-tests for differences in means among high, medium, and low levels of creative production are presented in section 7.6.

## **7.1 Effects of psychological facilitators of creativity on creative processing**

The relationships between psychological facilitators of creativity and creative processing presented in Model 1 were tested by estimating the structure model in LISREL8.7. Figure 21 presents the results from this test.

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<sup>14</sup> For all models, significance is reported as follows: \* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .



chi-square = 74.26 (df = 63),  $p = 0.1577$   
 RMSEA = 0.027  
 CFI = 0.99  
 SRMR = 0.049

Figure 21: Results Model 1: Relationships between psychological facilitators of creativity and creative processing

Overall, the model fits the data well. Positive relationships were expected between all four facilitator dimensions and each of the two processing dimensions. The results show that knowledge had no significant effect on conceptual combination, and neither motivation nor self-efficacy had significant effects on bottom-up thinking. Self-efficacy had no significant effect on either creative processing dimension. Low squared multiple correlations ( $R^2 = .05$  for both endogenous constructs) suggest that only a fraction of the variation in creative processing is explained by the creative ability variables included here.

Model 2a and 2b proposed that interactions between knowledge and motivation and between knowledge and innovativeness would have a positive effect on both creative processing dimensions. The models were tested in LISREL, and results are as expected if (1) the model fits the data well and

(2) the path coefficient between the latent interaction variable and the latent dependent variable is significant.

The interaction terms were computed as follows (Marsh et al., 2004, Jaccard et al., 1990): Measures of the latent interaction factors were formed by multiplying the indicator with the highest factor loading from the first factor by the corresponding indicator of the second factor, the indicator with the second highest factor loading of the first latent factor by the indicator with the second highest factor loading of the second latent factor, and so on. Because of different distribution properties, and to avoid potential problems with multicollinearity, all items were standardized by mean centering before forming the multiplicative indexes. Figure 22 presents the results:

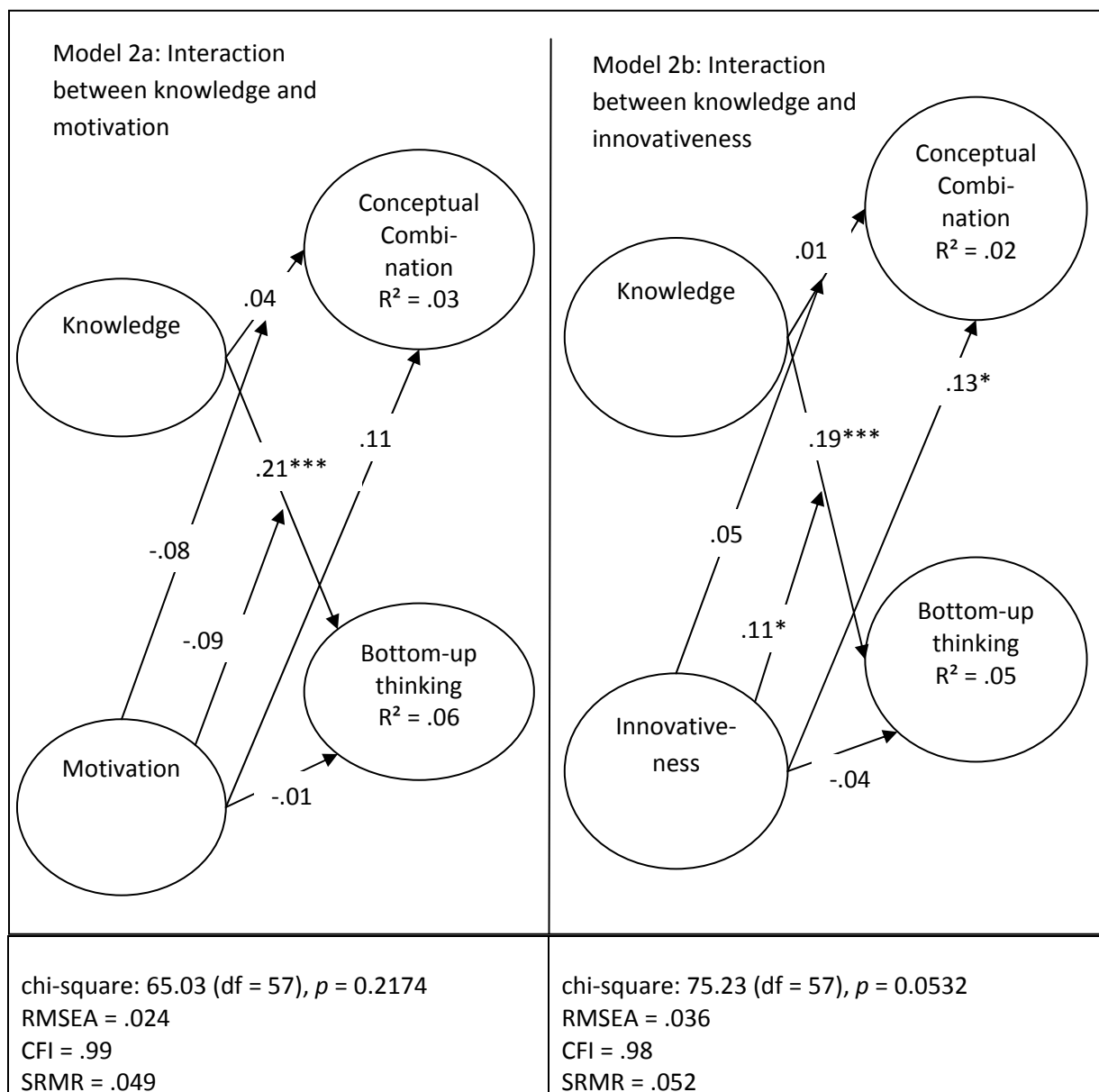


Figure 22: Results Model 2a and Model 2b: Interaction effects on creative processing

Figure 22 shows that both models fit the data well. The only significant interaction effect is found between knowledge and innovativeness on bottom-up thinking. The coefficient is positive, suggesting that higher levels of knowledge have an even stronger impact on bottom-up thinking when innovativeness is high as well. This is consistent with expectations. To illustrate, results were used to estimate the level of bottom-up thinking at high (i.e., 10), and low (i.e., 1) levels of knowledge and innovativeness. Figure 23 presents this illustration:

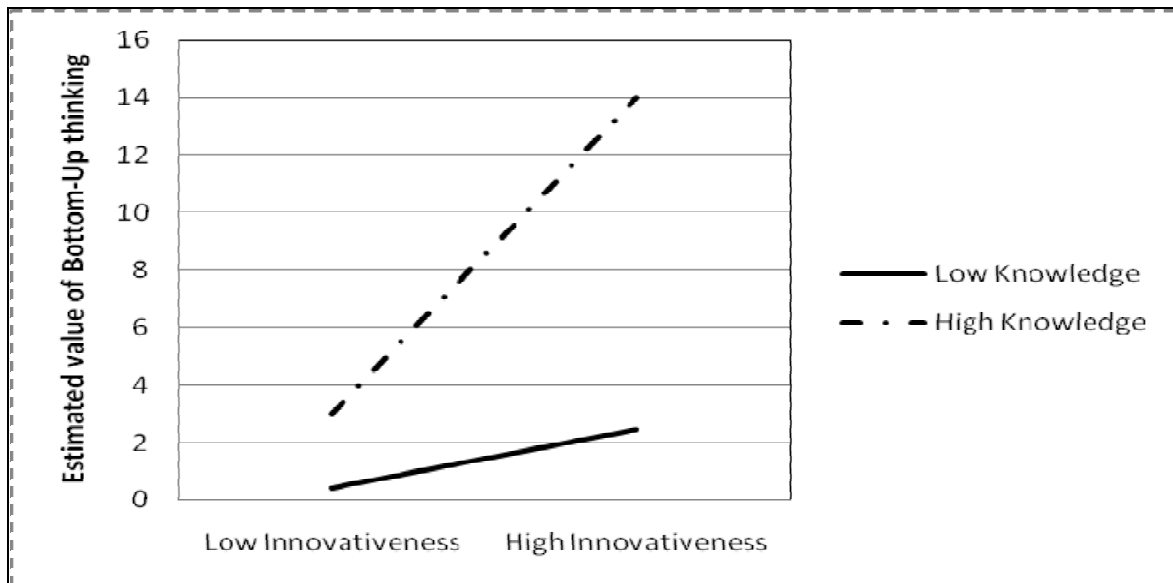


Figure 23: Estimation for significant knowledge x innovativeness interaction

## 7.2 Effects of psychological facilitators of creativity on creative product

Models 3 and 4 propose positive relationships between each of the psychological facilitators of creativity and creative product. In Model 3, the creative product construct is modeled as a unidimensional, formative construct. That is, there is one indicator of creative product, and this item is calculated by adding the sums of scores on each of the three dimensions (originality, usefulness, and aesthetics)<sup>15</sup>. The model was tested in LISREL 8.7. Figure 24 presents the results.

<sup>15</sup> The same model was also tested with the measure of creative product as a multiplicative index (i.e., creative product = originality x usefulness x aesthetics). This model yielded similar results as the additive model (i.e., creative product = originality + usefulness + aesthetics).

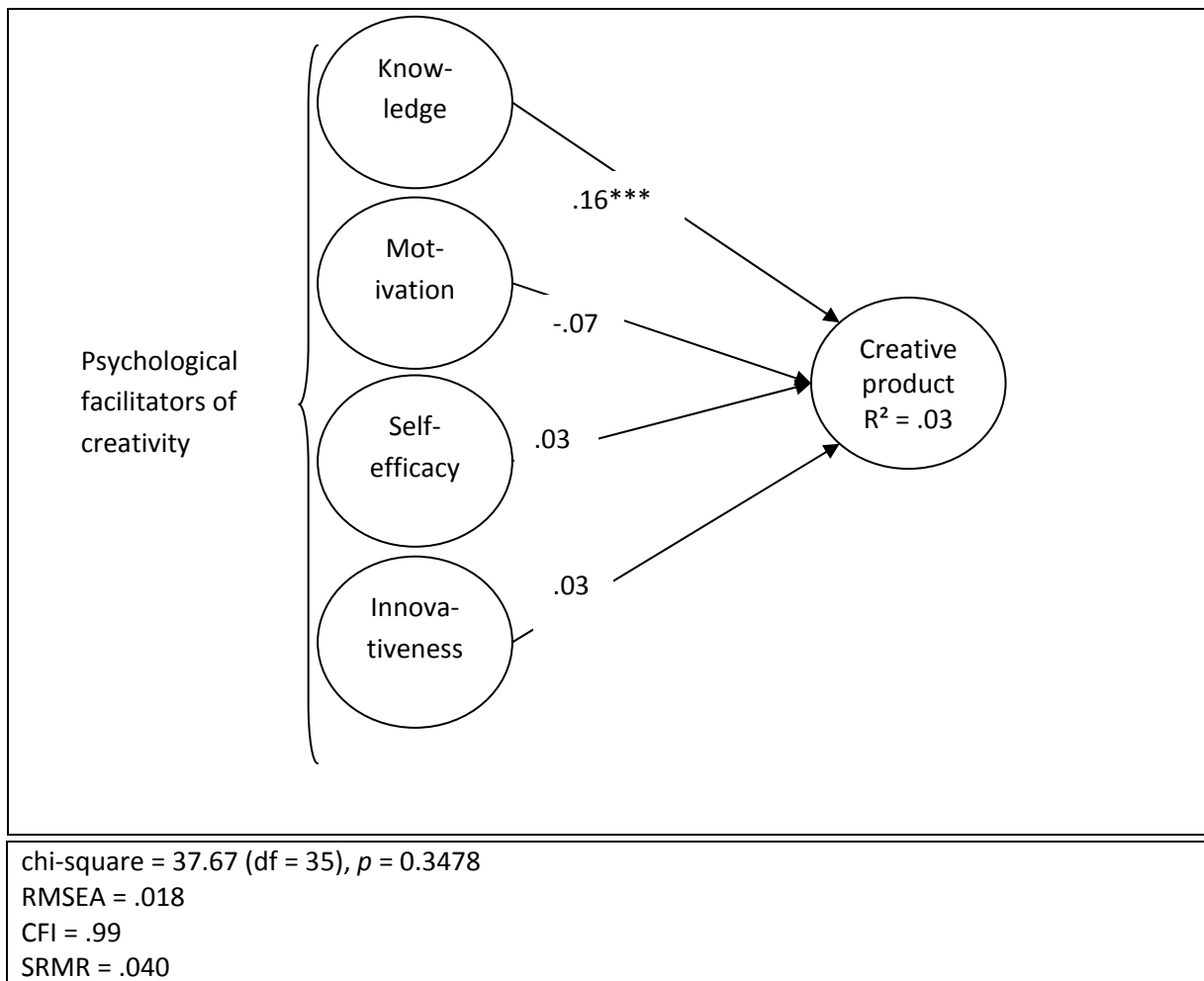


Figure 24: Results Model 3: Effects of psychological facilitators of creativity on the one-dimensional creative product construct

The model fits the data well. Low squared multiple correlations indicate that only a fraction of variation in creativity is explained by the factors included here. The only significant path is the effect from knowledge to creative product. This path is positive, indicating that higher levels of knowledge lead to more creative solutions.

According to theoretical and empirical indications in this research, creativity may be better conceptualized as a reflective, three-dimensional construct. Conceptualizing creative product as three dimensional allows for estimation of effects on each of the three dimensions and perhaps a more detailed understanding of factors that influence different aspects of creativity. Model 4 represents creative product as three dimensional. This model was estimated in LISREL 8.7. Figure 25 presents the results:

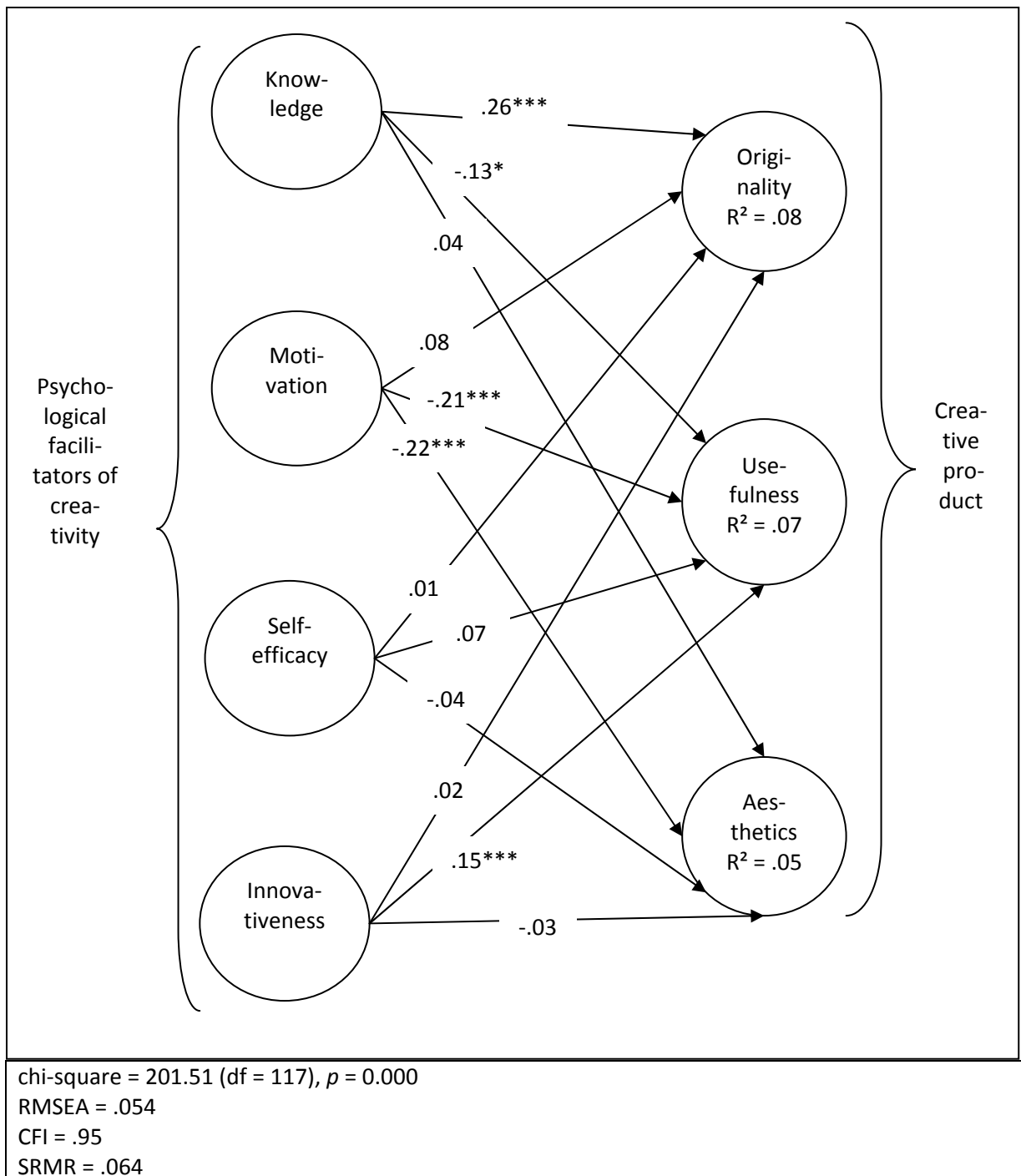


Figure 25: Results Model 4: Effects of psychological facilitators of creativity on the three-dimensional creative product construct

Model fit is acceptable. Compared with Model 3, in which creative product is treated as a unidimensional construct, Model 4, which operationalizes creative product as three dimensional, has poorer fit but allows for interpretations of the differential influence of some of the dimensions of psychological facilitators of creativity on each of the three creative product dimensions. The only significant effect on originality comes from knowledge, though knowledge (positive), motivation (negative), and innovativeness (positive) all have a significant influence on usefulness. Except for the

negative effect of motivation on usefulness, these findings are in line with expectations. Motivation is the only dimension with a significant effect on aesthetics, and that effect is negative.

### 7.3 Effects of creative processing on creative product

Models 5 and 6 represent expected effects of creative processing on creative product. Similar to previous tests of the relationships between psychological facilitators of creativity and creative product, two models are estimated: one in which creative product is modeled as a unidimensional construct and one in which it is modeled as a three-dimensional construct. Figure 26 shows the results from the Model 5 estimation:

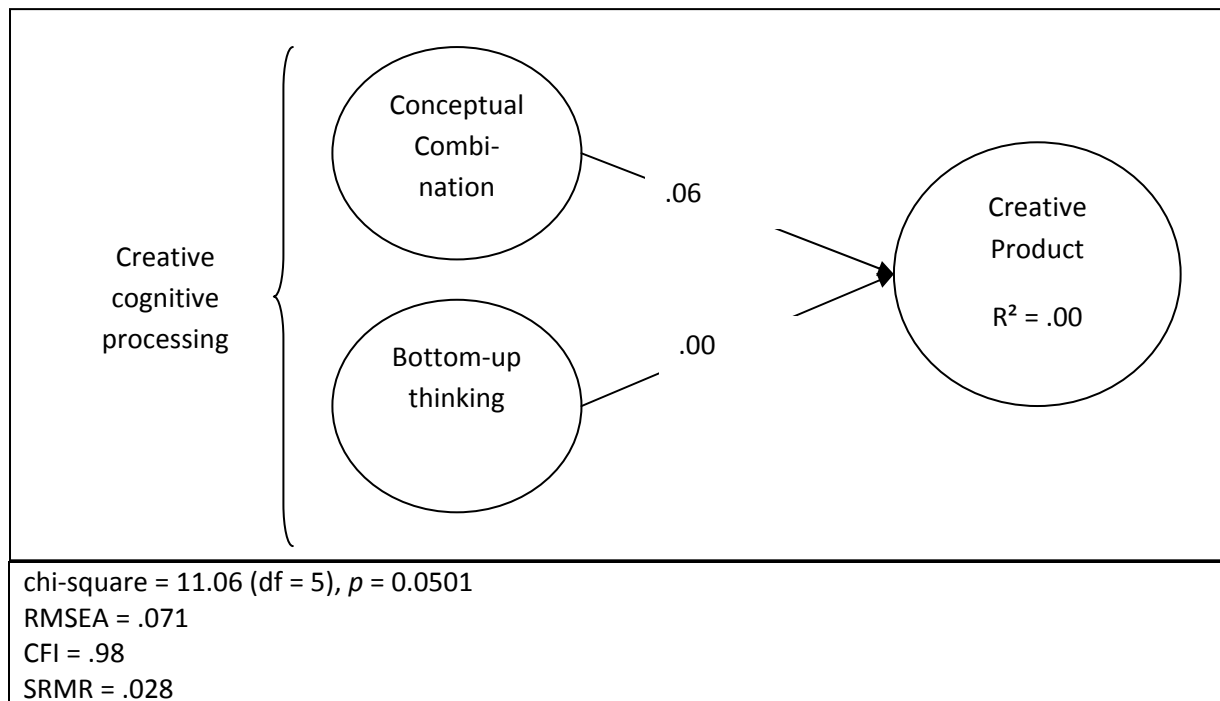


Figure 26: Results Model 5: Effects of creative processing on the one-dimensional creative product construct

Although the model fits the data well, it does not explain any variation in creative product, and none of the paths are significant. To determine whether more insight can be gained by conceptualizing the creative product construct as three dimensional, Model 6 was estimated. Figure 27 presents the results.

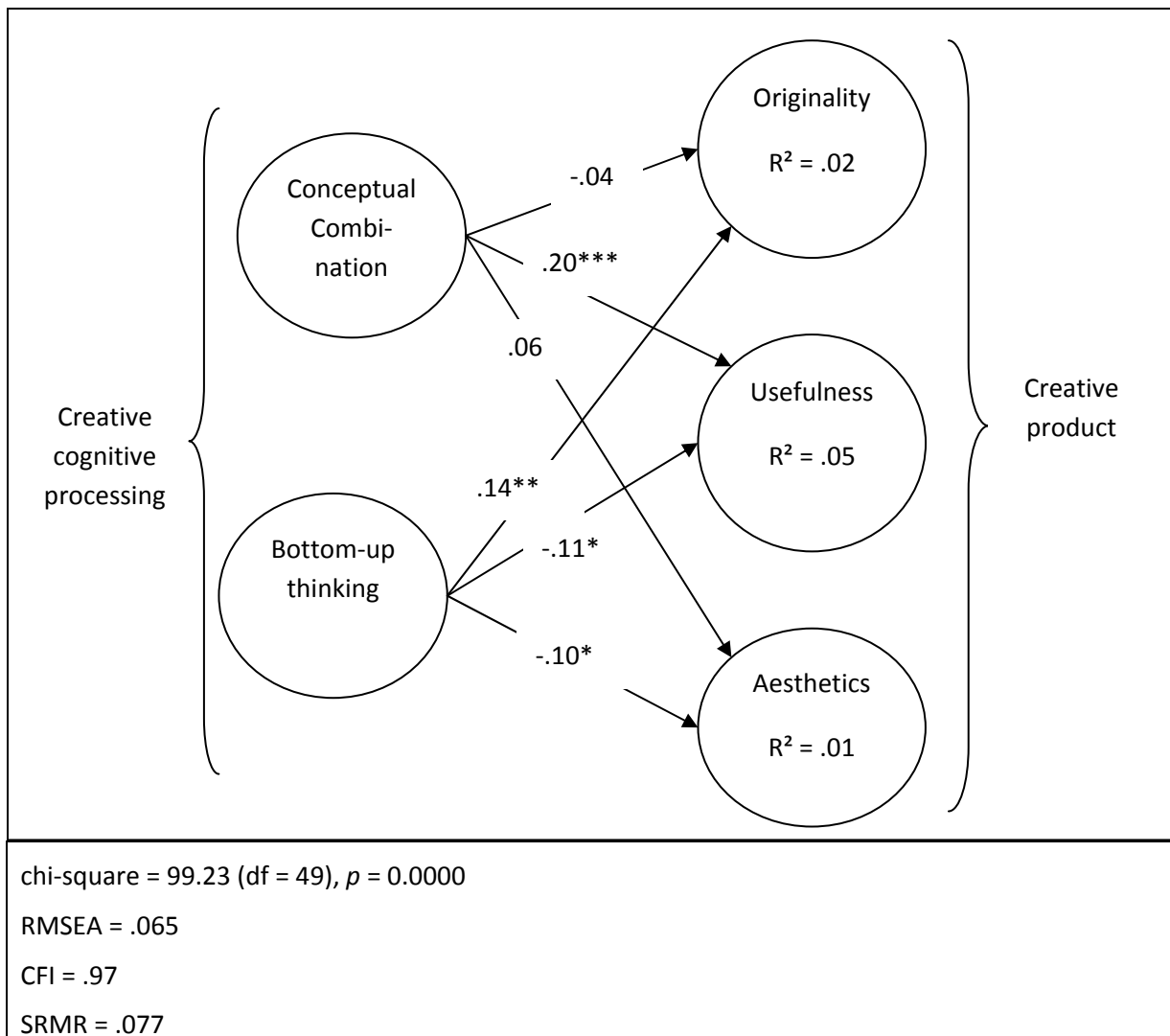


Figure 27: Results Model 6: Effects of creative processing on the three-dimensional creative product

Model fit is acceptable. When the creative product construct is treated as three dimensional, the nature of the relationships becomes clearer (see Figure 27). Bottom-up thinking has a significant, positive effect on originality and a negative influence on usefulness and aesthetics, indicating that as consumers use more bottom-up creative processing during decision making, originality increases but usefulness and aesthetics decrease. Conceptual combination only influences usefulness significantly. This effect is positive, indicating that as consumers consider more and more unique categories of information, usefulness of the solution increases.

Two models predicting interaction effects between creative processing and two dimensions of psychological facilitators of creativity were developed. These were tested, and the results appear in Figure 28 and Figure 29.



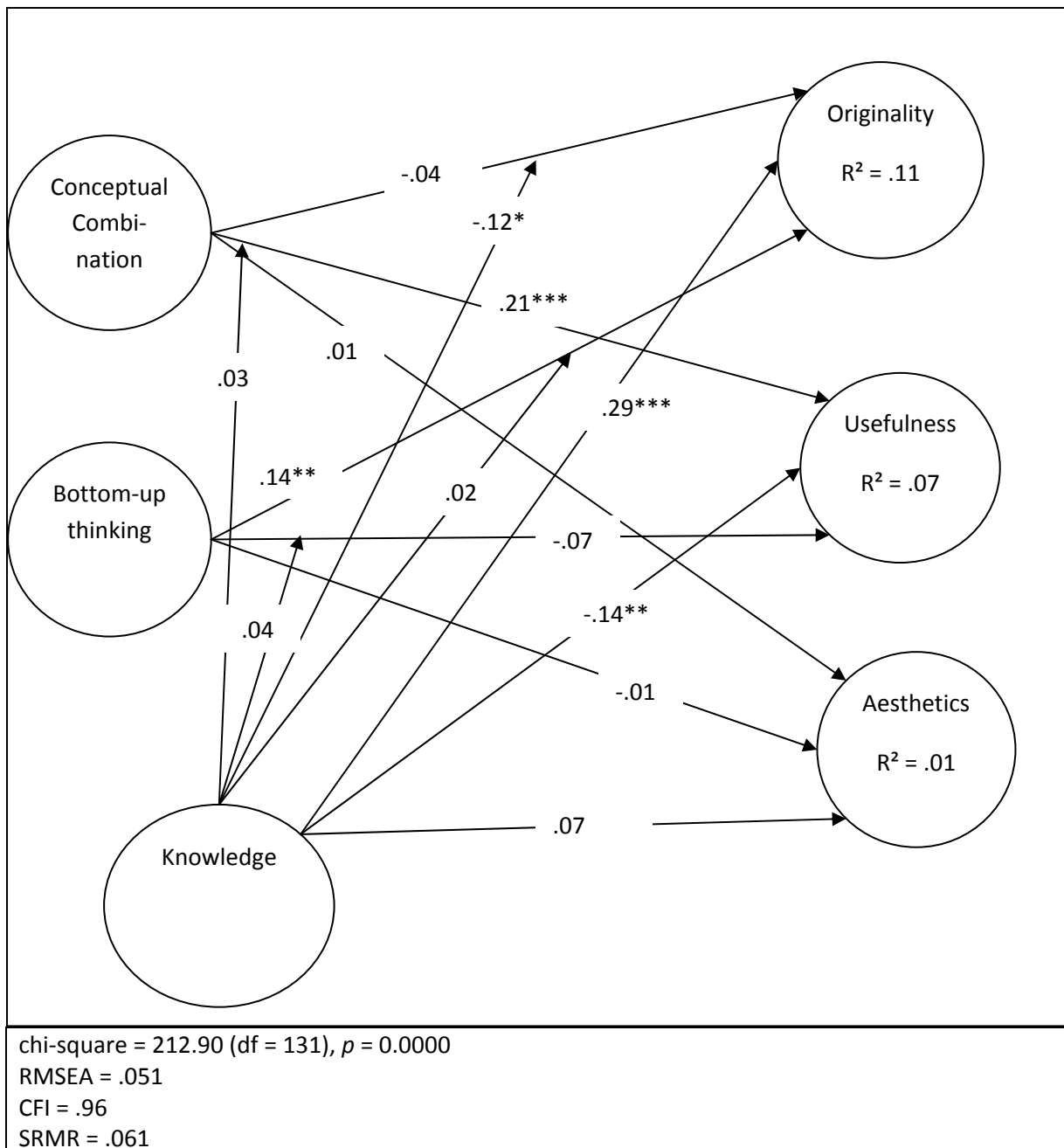


Figure 28: Results Model 7a: Effect of the interaction between knowledge and creative processing on creative product

The model has acceptable fit. The significant interaction between knowledge and conceptual combination is negative, indicating that at same levels of conceptual combination, originality decreases as knowledge increases. To illustrate, Figure 29 shows estimated levels of originality at high (i.e., 10) and low (i.e., 1) levels of knowledge and conceptual combination.

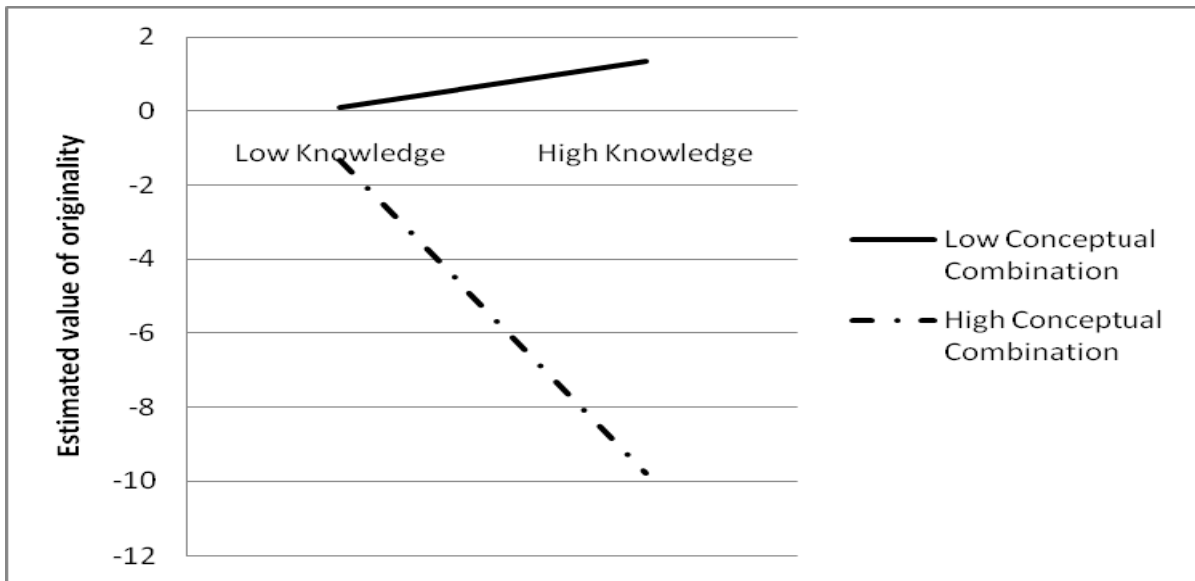


Figure 29: Estimation for significant knowledge x conceptual combination interaction

Figure 29 clearly indicates that when conceptual combination is high, originality decreases as knowledge increases. This is a surprising result because the interaction effect was expected to be positive. Possible explanations are offered in Chapter 8.

It was expected that the interaction between motivation and creative processing would influence usefulness and originality. This model was tested, and the results appear in Figure 30:

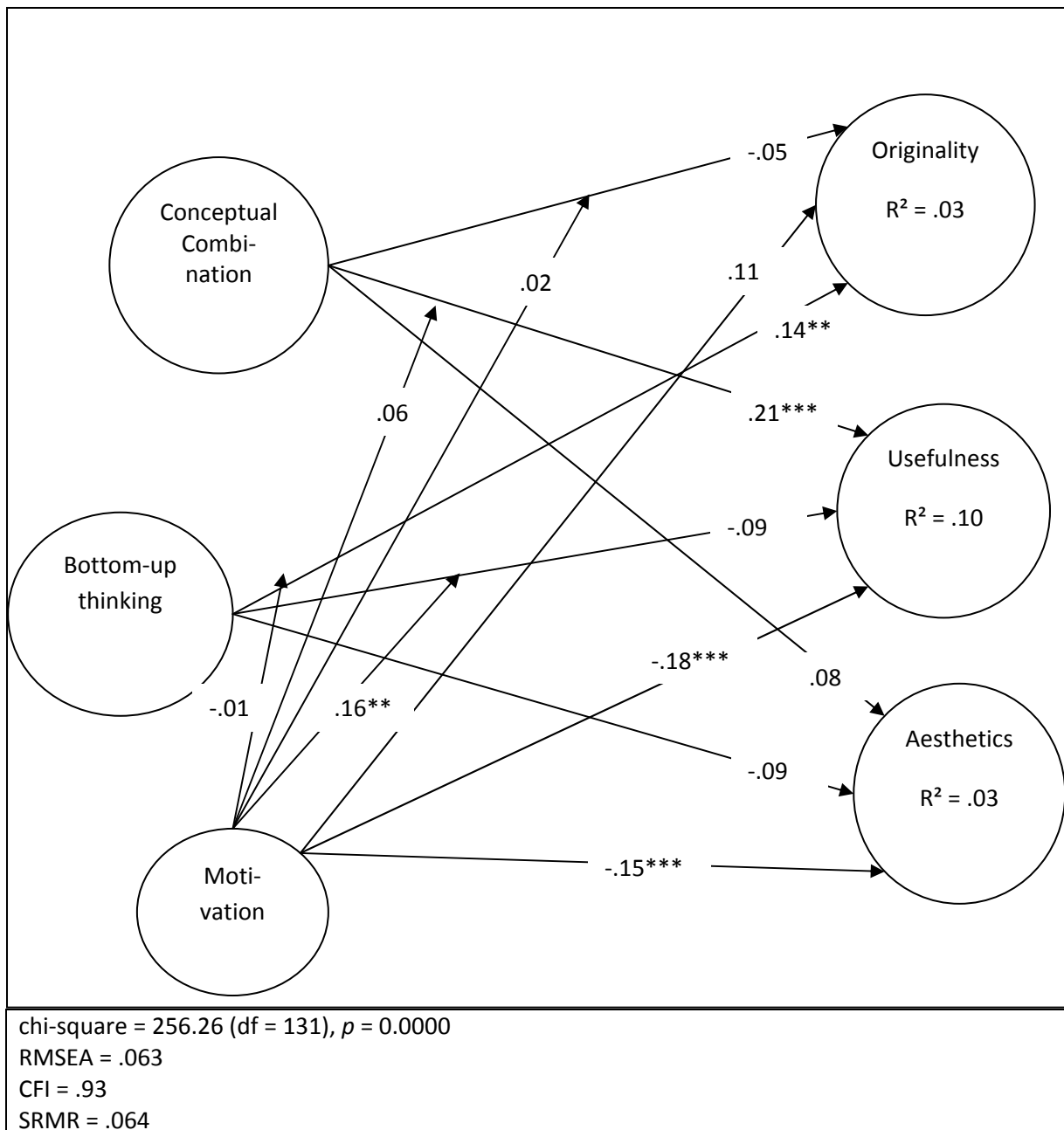


Figure 30: Results Model 7b: Effect of the interaction between motivation and creative processing on creative product

Model 7b has a poorer fit than the previous models, with a CFI of .93, but it is still acceptable because it is close to the combination rule that Hu and Bentler (1999) suggest for small samples ( $n < 250$ )—that is, an RMSEA less than .06 and an SRMR less than .09. The only significant interaction is between motivation and bottom-up thinking on usefulness. This coefficient is positive, indicating higher levels of usefulness in solutions suggested by consumers who are motivated and use bottom-up thinking. Figure 31 provides an illustration of this effect:

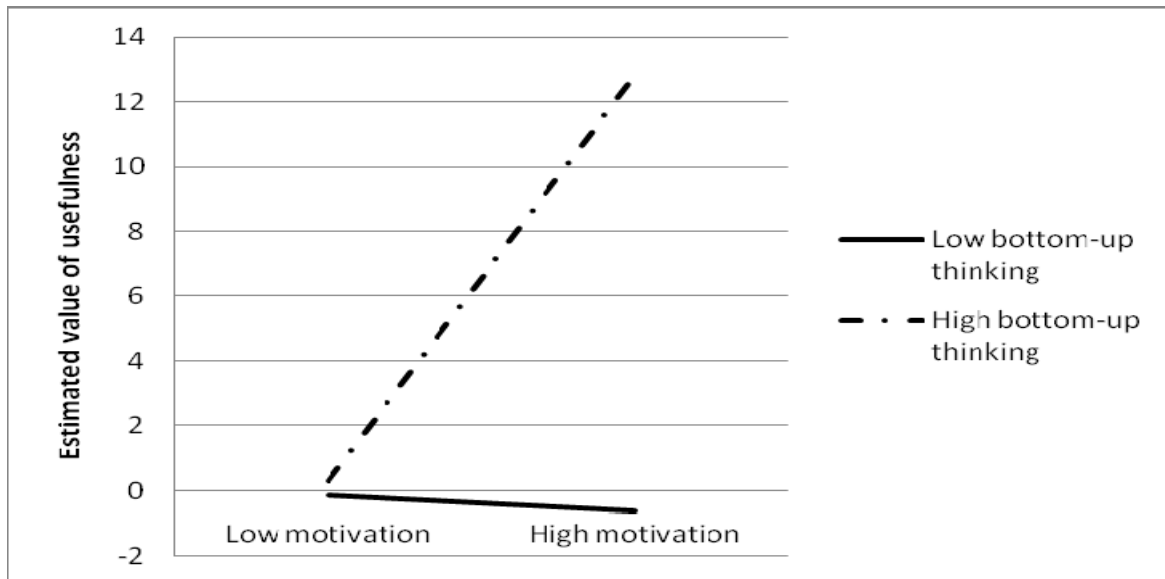


Figure 31: Estimations for significant motivation x bottom-up thinking interactions

#### 7.4 Test of mediation hypothesis

It was hypothesized that creative processing would partially mediate the effect of psychological facilitators of creativity on creative production. Mediation hypotheses can be tested in LISREL by estimating the model with the hypothesized paths. However, even if the mediation model fits the data well, other models may fit equally well or better, and therefore a more rigorous test is needed to assess relative fit by comparing the hypothesized model with the rival models (Jöreskog, 1993). Two rival models are specified. Rival Model 1 holds that creative processing does not mediate the effect of psychological facilitators of creativity on creative product. As previously argued, the three creativity constructs psychological facilitators of creativity, processing, and product are independent constructs. It may be the case that originality, usefulness, and aesthetics are direct results of both psychological facilitators of creativity and creative processing and that creative processing is a potential, but not necessary, condition for producing original, useful, and/or aesthetic outcomes. In this case, a model in which the paths from psychological facilitators of creativity to processing are removed would fit the data better than the hypothesized partial mediation model. Conversely, if creative processing is a necessary condition for producing original, useful, and/or aesthetic outcomes, a full mediation model should be a better representation of the data. Thus, Rival Model 2 holds that creative processing fully mediates the effects of psychological facilitators of creativity on creative product. The three models were estimated in LISREL, and a full display of the results appears in Table 26:

| <b>Model 8a:<br/>Hypothesized Model</b>  |                 | <b>Model 8b:<br/>Rival Model 1</b>  |                 | <b>Model 8c:<br/>Rival Model 2</b>   |                 |
|--|-----------------|---|-----------------|--|-----------------|
| Creative processing partially mediates the effects of psychological facilitators of creativity on creative product |                 | Direct links from both creative processing and psychological facilitators of creativity to creative product. No mediation |                 | Creative processing fully mediates the effects of psychological facilitators of creativity on creative product |                 |
| Path   | Effect estimate | Path  | Effect estimate | Path   | Effect estimate |
| Knowl-CC   | -.01            |   |                 | Knowl-CC   | .02             |
| Knowl-BU   | .20***          |   |                 | Knowl-BU   | .20***          |
| Knowl-Orig   | .23***          | Knowl-Orig  | .25***          |  |                 |
| Knowl-Use  | -.14**          | Knowl-Use   | -.19**          |  |                 |
| Knowl-Aesth  | .08             | Knowl-Aest  | .09             |  |                 |
| Mot-CC   | .01             |   |                 | Mot-CC   | .15**           |
| Mot-BU   | -.01            |   |                 | Mot-BU   | -.04            |
| Mot-Orig   | .10             | Mot-Orig  | .09             |  |                 |
| Mot-Use  | -.20***         | Mot-Use   | -.23***         |  |                 |
| Mot-Aest   | -.20***         | Mot-Aest  | -.23***         |  |                 |
| Efficacy-CC  | -.03            |   |                 | Efficacy-CC  | -.01            |
| Efficacy-BU  | -.07            |   |                 | Efficacy-BU  | -.02            |
| Efficacy-Orig  | .06             | Efficacy-Orig   | .00             |  |                 |
| Efficacy-Use   | -.05            | Efficacy-Use  | .13             |  |                 |
| Efficacy-Aest  | -.03            | Efficacy-Aest   | .04             |  |                 |
| Innov-CC   | -.04            |   |                 | Innov-CC   | .02             |
| Innov-BU   | .09             |   |                 | Innov-BU   | .08             |
| Innov-Orig   | -.06            | Innov-Orig  | -.06            |  |                 |
| Innov-Use  | .17**           | Innov-Use   | .17**           |  |                 |
| Innov-Aest   | -.03            | Innov-Aest  | -.04            |  |                 |
| CC-Orig  | -.06            | CC-Orig   | .05             | CC-Orig  | -.04            |
| CC-Use   | .03             | CC-Use  | .21***          | CC-Use   | .18***          |
| CC-Aest  | .01             | CC-Aest   | .13*            | CC-Aest  | .07             |
| BU-Orig  | .08             | BU-Orig   | .07             | BU-Orig  | .14*            |
| BU-Use   | -.09            | BU-Use  | -.11            | BU-Use   | -.14*           |
| BU-Aest  | -.07            | BU-Aest   | -.12            | BU-Aest  | -.08            |
|  | R <sup>2</sup>  |   | R <sup>2</sup>  |  | R <sup>2</sup>  |
| Orig   | .09             | Orig  | .09             | Orig   | .02             |
| Use  | .09             | Use   | .12             | Use  | .05             |
| Aest   | .05             | Aest  | .07             | Aest   | .02             |
| BU   | .00             | BU  |                 | BU   | .02             |
| CC   | .06             | CC  |                 | CC   | .06             |
| chi-square = 299.12, df = 179, p = 0.000<br>RMSEA = .053<br>CFI = 0.94<br>SRMR = .065                              |                 | chi-square = 394.06, df = 220, p = 0.0000<br>RMSEA = .057<br>CFI = 0.93<br>SRMR = .059                                    |                 | chi-square = 444.48, df = 233, p = 0.0000<br>RMSEA = .061<br>CFI = 0.92<br>SRMR = .078                         |                 |

Table 26: Results Models 8a, 8b, and 8c: Mediation models

Table 26 shows that the hypothesized model and Rival Model 1 have acceptable fit. Rival Model 2 is close to acceptable and thus is kept to compare it with the other two models. To determine which model fits the data best, a model comparison was performed. Because both rival models are more restrictive (i.e., both rival models can be obtained from the hypothesized model by constraining one or more of the free parameters in the hypothesized model) than the hypothesized model, the rival models are nested in the hypothesized model. Nested models can be compared by means of chi-square difference tests. The results of this test appear in Table 27.

| <b>Model</b>                         | <b>df</b>                    | <b>chi-square</b>                    |
|--------------------------------------|------------------------------|--------------------------------------|
| Hypothesized model                   | 221                          | 402.59                               |
| Rival Model 1                        | 220                          | 394.06                               |
| Rival Model 2                        | 233                          | 444.48                               |
| <b>Model comparisons</b>             | <b><math>\Delta</math>df</b> | <b><math>\Delta</math>chi-square</b> |
| Rival Model 1 vs. hypothesized model | 1                            | 8.53*41.89*                          |
| Hypothesized model vs. Rival Model 2 | 12                           | 50.42*                               |
| Rival Model 1 vs. Rival Model 2      | 13                           |                                      |

Table 27: Model comparisons between hypothesized mediation model and rival models<sup>16</sup>

The results suggest that the Rival Model 1, with no mediation, fits the data better than the other two models. The full mediation model has the poorest fit. This does not support the hypothesis that creative processing partially mediates the effects of psychological facilitators of creativity on creative production.

## 7.5 Test of effects of creative product and creative cognitive processing on solution evaluation

It was expected that participants would evaluate more creative solutions more favourably. To test this, Model 9 was estimated. The results from this test appear in Figure 32:

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<sup>16</sup> Note \*:  $p < .01$

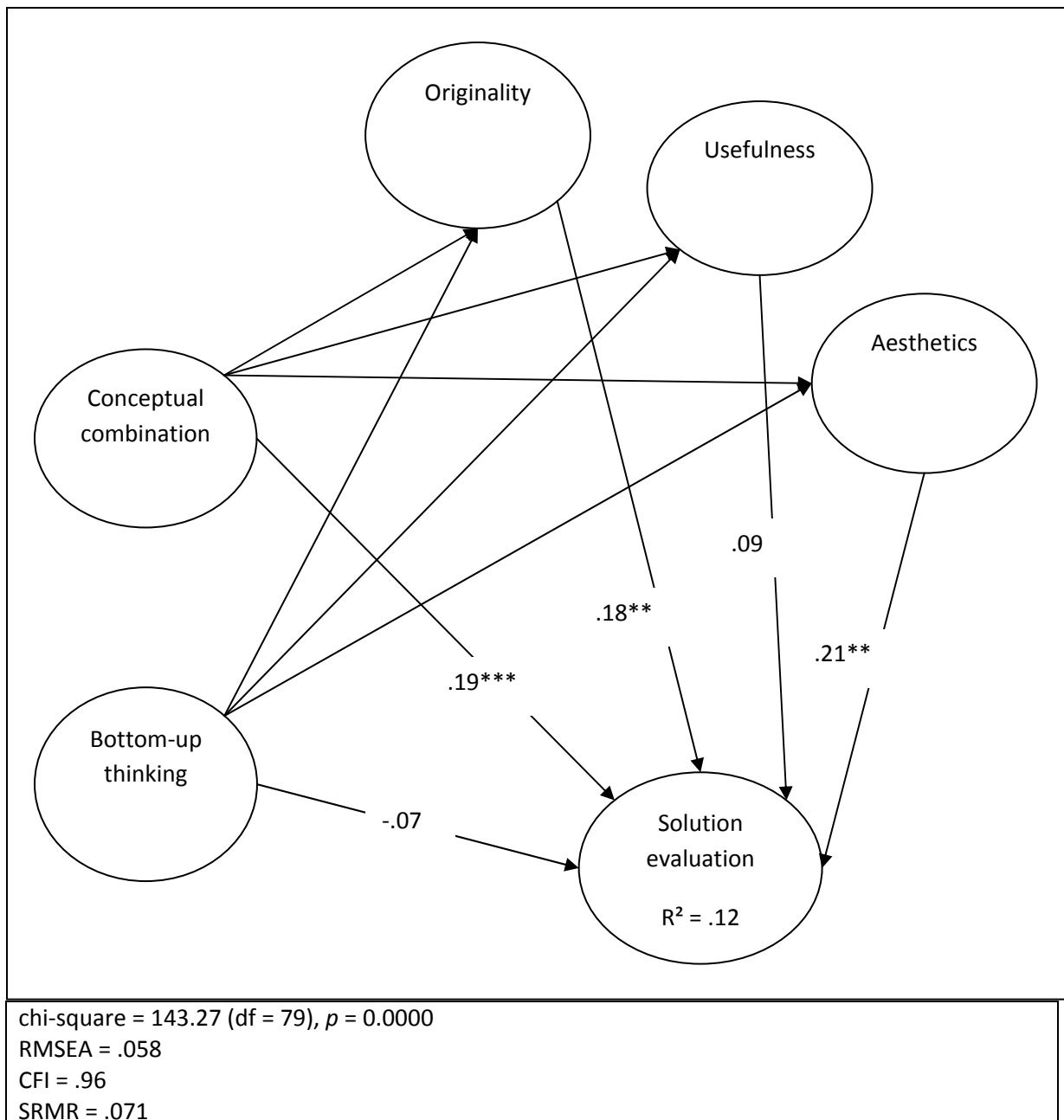


Figure 32: Results Model 9: Effects of creative product and creative cognitive processing on solution evaluation

The model fits the data well. Originality, aesthetics, and conceptual combination have significant, positive effects on solution evaluation, indicating that participants evaluate their own solutions more positive if the solution is more creative and if the decision process has been more creative.

#### 7.4 Additional tests of hypotheses about effects on creativity

As discussed in Chapter 2 and Chapter 4, high levels of creative production tend to score high on all dimensions of the concept. The analysis in the previous chapters shows that richer information is obtained when the effects on the dimensions are analyzed separately. This is also consistent with Moreau and Dahl's (2005) work on consumer creativity. However, when studying creativity, an

interesting question is whether people producing highly creative solutions differ from those producing more ordinary solutions. The previous chapters have shown that almost all the effects found when creativity is operationalized as a three-dimensional construct disappear when the construct is operationalized as unidimensional. However, these tests treated creativity as a continuous variable, and totally different solutions are represented as equal (i.e., a solution high on usefulness and low on originality may have the exact same score as a solution high on originality and low on usefulness). Thus, to get a more realistic test of the hypotheses that propose effects on creativity, a new creativity variable was constructed on the basis of the eight items in the creative product scale using the following procedure: Items were first summed to form one indicator of each of the three dimensions (originality, usefulness, and aesthetics). Then, each observation was given a creativity score based on their scores on these three items: Observations in the top 25% of all three dimensions were labeled high, observations in the bottom 25% on all three dimensions were labeled low, and the rest were labeled medium. The new variable was then used as a grouping variable to test differences in means on psychological facilitators of creativity and creative cognitive processing. The testing was done in two rounds: First, the highly creative were compared with those with medium creativity, and second, the high- and low-creativity groups were compared. A t-test was performed in SPSS to test the differences. The results of the analysis appear in Table 28:



| Variable               | Mean score at different levels of creative production |       | t-value for test of difference in means compared to the mean for the high creativity group |
|------------------------|---|-------|--|
| Knowledge              | High (n = 33)   | 14.24 |  |
|                        | Medium (n = 183)                                      | 13.43 | 1.274  |
|                        | Low (n = 25)  | 12.44 | 2.193**  |
| Motivation             | High (n = 29)   | 14.93 |  |
|                        | Medium (n = 172)                                      | 13.33 | 2.017**  |
|                        | Low (n = 24)  | 14.79 | 0.140  |
| Innovativeness         | High (n = 32)   | 11.19 |  |
|                        | Medium (n = 185)                                      | 10.92 | 0.625  |
|                        | Low (n = 25)  | 10.84 | 0.538  |
| Efficacy               | High (n = 31)   | 18.58 |  |
|                        | Medium (n = 177)                                      | 18.34 | 0.433  |
|                        | Low (n = 26)  | 17.15 | 1.727*   |
| Conceptual combination | High (n = 30)   | 13.43 |  |
|                        | Medium (n = 177)                                      | 11.80 | 1.326  |
|                        | Low (n = 25)  | 9.08  | 3.023***   |
| Bottom-up thinking     | High (n = 32)   | 21.59 |  |
|                        | Medium (n = 174)                                      | 23.13 | 0.761  |
|                        | Low (n = 25)  | 23.20 | 0.627  |

Table 28: Differences in psychological facilitators of creativity and creative cognitive processing among high, medium, and low levels of creative production<sup>17</sup>

As Table 28 shows, the participants who produced the most creative solutions scored significantly higher than participants in the low-creativity group on knowledge, efficacy, and conceptual combination. In addition, the level of motivation for those who produced solutions with medium levels of creativity was significantly lower than that of the high-creativity group. The motivation score for the low-creativity group is also higher than the score for the medium-creativity group ( $t(1.777)$ ,  $p < .1$ ), and there is no significant difference between the high- and the low-creativity group in terms of motivation.

<sup>17</sup> Note: \*:  $p < .1$ ; \*\*:  $p < .05$ ; \*\*\*:  $p < .01$



## **Chapter 8 Discussion and implications**

The aim of this research was to gain deeper understanding of the consumer as a creative problem solver. From a review of creativity theory from psychology and consumer behavior literature, this research developed a conceptual model proposing relationships among psychological facilitators of creativity, creative cognitive processing, creative product, and evaluation of solution (see Figure 5). Four propositions were made following review of theory:

1. The three constructs psychological facilitators of creativity, creative cognitive processing, and creative product are independent constructs that are related to, but not dependent on, one another.
2. A richer understanding of the antecedents to creativity in solutions to consumption problems can be gained by investigating creative product as a multidimensional construct. In the context of consumption, these dimensions are best described as originality, usefulness, and aesthetics dimensions.
3. Psychological facilitators of creativity influence both creative cognitive processing and creative product, and creative cognitive processing influences psychological facilitators of creativity.
4. Creative cognitive processing during decision making and the level of creativity in solution positively influence the consumer's evaluation of the solution.

This chapter is organized as follows: Methodological strengths and weaknesses are first discussed in section 8.1. Then, the proposition regarding the independence of creativity constructs is discussed in light of results in section 8.2. The multidimensional operationalization proposition is discussed in section 8.3, and the effects of psychological facilitators of creativity on processing and product and the effects of processing on product are discussed in section 8.4. In section 8.5, the relationships among creative cognitive processing, creative product, and solution evaluation are discussed. Contributions and implications are presented in section 8.6, followed by suggestions for further research in section 8.7.

### **8.1 Methodological limitations and strengths**

Before a discussion of the results, it is necessary to highlight some methodological limitations and strengths. These are discussed together because a factor that may be a limitation in one perspective may be viewed as strength in another perspective.

This research set forth to gain a deeper understanding of consumers as creative problem solvers. When a framework or theory is applied to understand a phenomenon, it might be questioned how this particular framework adds insight to the phenomenon or to what extent it is better or more useful than other frameworks. Traditional frameworks in consumer research propose that the consumer is a rational decision maker who wants to minimize the cognitive effort needed to reach a decision. The creativity framework developed and tested herein offers an alternative to this perspective, but no attempt is made to compare the usefulness of the frameworks in terms of explaining important variations in consumers' decisions. Because in many respects this research opens up a new field of inquiry, it belongs mainly in the context of discovery. One limitation of research in this context is that it does not necessarily produce results that immediately can be translated into useful implications for managers. However, this type of research is a necessary first step to build research programs that eventually may lead to new practical insight as well.

By operating in the context of discovery, it might be argued that qualitative design is more appropriate than the quantitative approach taken in this research. A qualitative design allows for deeper understanding and insight into problems that are less explored or ill-defined. When a quantitative research design was chosen here, it was because the literature on creativity from psychology offers a well-developed framework for studying the phenomena of interest.

A fundamental concern in research is to reduce the amount of error connected with drawing conclusions from empirical observations. A Type I error occurs when researchers believe there is a genuine effect in the population when there is not, and a Type II error occurs when researchers believe there is no effect in the population when there is. As the probability of a Type I error increases, the probability of a Type II error decreases. Efforts to enhance internal validity often focus on reducing the probability of Type II errors, while efforts to enhance external validity focus more on reducing Type I errors. Much creativity research in psychology and consumer research is performed in controlled experiments, "forcing" participants to produce creative solutions by constraining the situation in a way that the most obvious solution is unavailable (e.g., Burroughs and Mick [2004] asked participants what they would do if their shoes were scuffed and they had no shoe polish, and they added a time constraint that made it impossible to suggest travelling to the store to buy shoe polish or asking the neighbor to borrow some). By doing this, variation in creativity is ensured, and it is easier to detect different effects on creativity (i.e., internal validity is enhanced, and the probability of Type II errors is reduced). The current research was concerned with the extent to which consumers used creative processing and produced creative solutions to mundane consumption problems in situations in which no (or little) constraints were operating. This resulted in a design in

which participants were given the opportunity to choose whatever solution that came to mind. Although this provided a more realistic setting, the design may have reduced the ability of the data to capture variations in effects of the different antecedents, and thus the probability of Type II errors might have increased. Furthermore, the design is correlational, with no means to control for other potential influences on the dependent constructs, rather than causal, which would have provided the opportunity to control for alternative explanations. The correlational nature of the design also threatens the internal validity of the findings, but it adds to confidence in the external validity because it allows for a more realistic setting.

Questions of measurement are important in evaluating empirical research. Without proper measures, it is impossible to understand what empirical observations mean. This research uses measures of three concepts: psychological facilitators of creativity, creative cognitive processes, and creative product. Measures of psychological facilitators of creativity were based on existing measures proved valid in previous consumer research, and tests of measurement models returned valid and reliable results. The creative product concept was measured by items developed following an established scale-development procedure. Three independent judges assessed each solution on the items, and the measurement model was accepted as both reliable and valid. Thus, the validity and reliability of the measures of psychological facilitators of creativity and creative product may be considered a strength in this research. Creative cognitive processes are difficult both to operationalize and to measure for several reasons. First, they are not directly observable, and any measure must be based on participants' reports of their own thoughts. There will always be errors connected with these reports because participants need to be both able and willing to share information about their thinking. Their ability is the most concerning because a lack of willingness will evidence in a lack of response. Factors reducing ability may include the inability to articulate thoughts, a loss of memory, and the tendency to rationalize over own decisions. In this research, participants were asked to report their thoughts immediately after coming up with a solution, reducing the potential for memory loss. Another equally important question pertaining to measurement of creative processing is how the thought protocols were analyzed. To my knowledge, no research has been conducted to develop valid measures of conceptual combination. Items used in this research were based on a literature review, measures used in previous research (Moreau and Dahl, 2005), and two focus group interviews. The bottom-up measures were assessed by three independent judges, and agreement was acceptable. The conceptual combination measures were validated by an independent judge. Although the measurement model achieved convergent and discriminant validity and reliability, it was difficult to know which parts of the creative cognitive

process were measured and if the measures were sufficient. This process might be considered a potential weakness in this research.

One threat to construct validity in survey-based research is common method variance. Common method variance occurs when the measurement technique introduces systematic variance into the measure (Doty and Gilck, 1998). This might happen if all traits are measured by having participants answer questions in a survey questionnaire. In the current research, the potential threat to construct validity is reduced through the use of different sources for measures of different constructs.

Psychological facilitators of creativity and evaluation of solution were measured by survey questions. Creative processing was measured by assessing thought protocols, which was done by two sources: Bottom-up thinking was assessed by three judges, and conceptual combination was assessed by the author and an independent judge. Creative product was assessed by three different independent judges. This process might be considered a strength of this research.

## **8.2 Proposition 1: Creativity constructs are independent**

Validation of measurement models and test of the mediation hypothesis indicate support for the proposition that the creativity constructs are independent. This means that a person may engage in creative processing during decision making and still end up suggesting a non-creative solution.

Likewise, a person may suggest a solution that is judged creative without engaging in highly creative processing. Intuitively, this seems logical. In existing research on creativity, however, the creativity constructs have largely been confounded in that a creative solution in itself has been taken as an indication that a creative cognitive process has occurred. It was hypothesized that creative processing would partially mediate the effects of psychological facilitators of creativity on creative product. This hypothesis was not supported, because the no mediation model fit significantly better than the partial or full mediation model. This is somewhat surprising because creativity researchers often equate creativity with creative cognitive processing. Therefore, there is a clear need for explication of constructs in this area of research. When studying creativity in more mundane, everyday problems, such as the ones investigated herein, separating the constructs is important to ensure validity and proper understanding of the phenomena of interest. The creative product concept refers to properties of the solution to a problem, and creative cognitive processing refers to properties of the problem-solving process preceding a solution decision. The results from this research suggest that the two dimensions share some of the same antecedents (i.e., knowledge, motivation, and innovativeness had a significant influence on both processing and product dimensions) but that creative cognitive processing is not a necessary antecedent to creative production. This means that a creative solution may well be a result of top-down, non-creative

processing and that a person engaging in creative processing during decision making may end up suggesting a non-creative solution. Thus, it is concluded that the creativity concepts are best studied as independent concepts.

### **8.3 Proposition 2: The creative product concept is multidimensional**

Following Moreau and Dahl (2005) and Rietzschel (2007), this research investigated the creative product construct as a multidimensional construct. A separate study presented in Chapter 5 was undertaken to develop proper measures of creative product assessment. The results from this study concluded that creativity in solutions to consumption problems can best be represented by three dimensions corresponding to the three dimensions that Burroughs et al. (2008) proposed: originality, usefulness, and aesthetics. The measurement model for creative product as a three-dimensional construct achieved validity in terms of both convergent and discriminant validity and reliability. When the structure models were estimated with three creative product dimensions, both psychological facilitators of creativity and creative cognitive processing dimensions had a differential influence on the three creative product dimensions. For example, it was found that knowledge positively influenced the originality dimension but negatively influenced the usefulness dimension. This is a result that would not have been found had the propositions been tested using the formative or categorized measure of creativity alone. Thus, the results suggest that further insight into the antecedents' effects is gained when creativity is analyzed as a multidimensional construct.

The squared multiple correlations of the structural equations ( $R^2$ ) indicate how much of the variation in the endogenous constructs are explained by the exogenous constructs in the model. The results from testing the no mediation model (Model 8b, results reported in Table 29) show that these figures are low for all constructs: .09 for originality, .12 for usefulness, and .07 for aesthetics. This clearly indicates that there is more to creativity than what is included here. Nonetheless, the explained variance is higher than when the creativity construct is measured by a formative measurement model—Figures 24 and 26 show that the R-squares for these models are .03 and .00, respectively. When the individual effects estimates are examined, both creative cognitive processing and psychological facilitators of creativity have the most influence on the usefulness dimension (i.e., all paths but one are significant). For the originality dimension, only knowledge and bottom-up thinking are significant, and for the aesthetics dimension, only motivation and bottom-up thinking are significant antecedents.

Creativity research is triggered by observations of creative production, and when the focus of interest is on what separates the truly creative solutions and their antecedents in terms of creative

processing, situation, and abilities, research must also include a measure of creativity as one construct. In this research, hypotheses were also tested on a formative measure of creativity (one creative solution item was computed by adding all items from the creative product assessment scale) as well as a categorization of creativity in solutions (the categories were “high creativity” when a solution scored in the top 25% on all three dimensions, “low creativity” when a solution scored in the lowest 25% on all three dimensions, and “medium creativity” for all other observations). In both cases, the results were less detailed, and the effects from motivation, innovativeness, self-efficacy, and creative processing became non-significant when models with a formative (i.e., additive) measure of creativity were tested. When hypotheses on the categorical measure of creativity were tested, the results suggested a U-shaped relationship between creativity and motivation. In addition, the effects from self-efficacy and conceptual combination remained significant, while the effect from innovativeness became non-significant. Influence from knowledge remained significant across all hypothesis tests. As argued in Chapter 4, a formative measurement model may be problematic not only because it does not distinguish between the different dimensions but also because it is difficult to assess differences between the truly creative and the medium-creative solutions. Therefore, it is concluded that (1) the creative product concept should be operationalized as a multidimensional construct to understand the effects of antecedents on creative production, and (2) when the creative product concept is operationalized as unidimensional, the preferred measurement model is a categorical measure of the construct.

### **8.4 Proposition 3: Effects of psychological facilitators of creativity on creative cognitive processing and creative product**

It was proposed that psychological facilitators of creativity and creative cognitive processing would influence creative product and that psychological facilitators of creativity would influence creative cognitive processing. Seven models proposing direct and indirect relationships were estimated. The effects on creative cognitive processing are discussed in section 8.4.1, and the effects on creative product are discussed in section 8.4.2.

#### **8.4.1. Effects on creative cognitive processing**

Creative cognitive processing was operationalized as a two-dimensional construct comprising conceptual combination and bottom-up thinking. This conceptualization is consistent with the creative cognition approach that holds that creative and non-creative thinking can be placed on a continuum, with common sets of processes (Ward et.al. 1999). The two dimensions used to measure creative cognitive processing were posited to capture different aspects of the phenomenon. While



conceptual combination captures the broader and more varied mental search that is assumed to characterize creative thinking (Ward 2004, Ward, 1994), bottom-up thinking is an indicator of leaving the path of least resistance (top-down thinking, or searching for an easily available solution) (Moreau and Dahl 2005). It was assumed that the proposed antecedents (knowledge, motivation, self-efficacy, and innovativeness) would positively influence both creative cognitive processing dimensions. Fit indexes suggested that the model fits the data well.

Research has suggested that the most important facilitator of creativity is knowledge (Weisberg, 1993). The results from the current research show that knowledge had a positive effect on bottom-up thinking but no significant influence on conceptual combination. The non-significant effect on conceptual combination was somewhat surprising. It implies that knowledgeable consumers do not have a greater likelihood of using their knowledge to combine information during decision making. A possible explanation for this is that less knowledgeable consumers also will search for combinations of knowledge to reach a good decision when motivation is high. However, with this explanation, a significant effect of the interaction between knowledge and motivation on conceptual combination would be expected, but this was not the case (the path coefficient was not significant).

The significant effect of knowledge on bottom-up thinking suggests that consumers with higher levels of knowledge are more likely to leave the path of least resistance and search for solutions using a bottom-up (i.e., consider attributes first and then alternatives) procedure. This effect was even stronger for consumers who also scored high on innovativeness; there was a significant effect of the interaction between knowledge and innovativeness on bottom-up thinking. Innovativeness has been linked to the desire to seek out the novel and creative, to take risks, and to seek variety (Bagozzi and Foxall, 1996). As with knowledge, this construct had both a significant direct effect on bottom-up thinking and the mentioned interaction effect. While knowledge was measured as a domain-specific construct, innovativeness was operationalized as an innate disposition to seek out the novel. The significant direct and interaction effects suggest that there is both an element of situation, or domain-specific factors, and an element of a more generalized personality factor that come into play when consumers engage in creative problem solving during decision making.

Innovativeness and knowledge both significantly influenced bottom-up thinking; however, motivation had a significant effect on conceptual combination but no significant effect on bottom-up thinking. Previous research has concluded that motivation has a strong effect on creativity (Amabile, 1996; Amabile, 1982; Amabile et.al 1994), but no research has documented the effect on different dimensions of creative cognitive processing. It is important to note that the effect of motivation was

different from that of knowledge and innovativeness. Conceptual combination refers to the tendency to conduct a broader search in memory during decision making. Motivation was measured as a domain-specific, enduring interest in the product category. This inherent interest increased the tendency to search for information in more varied categories of knowledge but did not affect the tendency to engage in bottom-up thinking.

It was proposed that self-efficacy would influence creative cognitive processing. Surprisingly, this effect was not supported. Self-efficacy has been linked to higher problem-solving skills (Bandura, 1997), and this led to the proposition that consumers with high self-efficacy would be more likely to use their problem-solving capabilities and engage in more creative processing. This was not supported, perhaps because the ability to solve problems more successfully does not necessarily mean that people will be more creative.

The findings presented herein suggest a differential influence of motivation on the one side and knowledge and innovativeness on the other side on creative cognitive processing dimensions. This finding helps understanding of creative cognitive processing. If people are highly motivated, they are more likely to conduct a broader search, as evidenced by the significant effect on conceptual combination, but they are not more likely to engage in more bottom-up processing. The opposite result was found for knowledge and innovativeness. This may be explained by the difference between the two dimensions of creative cognitive processing: Conceptual combination measured the extent to which participants focused on a broader specter of their own preferences and requirements, while bottom-up thinking referred to how participants evaluated different alternatives that came to mind (attributes first and then alternatives, or vice versa). Consumers scoring high on motivation may be more inclined to focus on their own needs and, therefore, more likely to engage in conceptual combination. Conversely, knowledgeable and innovative consumers may be more focused outwards on characteristics of potential solutions and therefore score higher on bottom-up thinking. The current research does not address this possible explanation, and therefore, further research is needed to explain the processes underlying the effects found here.

#### **8.4.2 Effects on creative product**

The creative product concept was analyzed both as a unidimensional formative construct and as a three-dimensional reflective construct. As discussed previously, the results presented herein indicate that treating creative product as a three-dimensional construct is a more valid conceptualization and allows for a more detailed understanding of the factors that influence creative production. The only

significant effect on the unidimensional creative product construct was that of knowledge, which had a significant, positive effect.

In creativity literature, there are two dominant views of the nature of the relationship between knowledge and creativity (Weisberg, 1993): The tension view holds that the relationship has an inverted U shape, and the foundation view predicts a linear relationship. When testing differences in mean knowledge at different levels of creativity in solution, support for the tension view would imply the highest level of knowledge at the medium level of creativity. The foundation view would predict a positive linear relationship. The current research found a positive relationship between knowledge and creativity, indicating support for the foundation view. First, the effect estimate between knowledge and creativity was positive. Second, there was a positive relationship between the originality dimension and knowledge. Finally, mean knowledge increased significantly when creativity in solution increased from low to high. Previous research has suggested either no relationship or a negative relationship between the usefulness dimension of creative product and knowledge (Rietzschel et al., 2007). This research found a significant, negative relationship between knowledge and usefulness and no significant relationship between knowledge and the aesthetics dimension. Taken together, the results suggest that as consumers become more knowledgeable, they are more likely to suggest original but less likely to suggest useful solutions to their consumption problem.

The results show that motivation had no significant effect on creativity as a unidimensional construct or on originality. This is surprising because the literature offers clear support for a positive relationship in other domains (e.g., Amabile, 1996). When mean differences in motivation were tested at different levels of creativity in solution, motivation was the lowest at medium levels of creativity and there were no differences in motivation between high and low levels of creativity. This suggests a U-shaped relationship between the two variables and may explain the lack of significant results when testing for a linear relationship. There was a significant, negative effect of motivation on usefulness and aesthetics. Perhaps consumers with low interest in the domain are likely to choose a few important attributes and make a decision based on the available alternatives (according to their performance on these). If this is the case, consumers with low motivation might suggest solutions that would be considered useful and aesthetic. The current research did not investigate these processes, and therefore further research is needed to understand the processes underlying the finding.

Surprisingly, innovativeness had a positive influence on usefulness but no significant influence on originality or aesthetics. This finding is puzzling. Innovativeness has been linked to consumer

creativity and consumers' adoption of new products (Hirschman, 1980; Rogers, 1995). A possible explanation for this is that innate innovativeness—that is, a *generalized* disposition across product classes—was measured. The results may have been more in line with expected relationships had *domain-specific* innovativeness been measured. However, additional research is needed both to verify the validity of this result and, if it is robust, to explain the processes underlying the result.

Self-efficacy is a construct that has not been previously tested in a creativity context. Thus, it was included in this research because prior research has shown that self-efficacy has a strong influence on consumers' decisions to engage in prosumption (Xie et al., 2008) and because people with high self-efficacy have higher problem-solving capabilities (Bandura 1992; Hill et al., 1987). The results suggest that in this context, self-efficacy did not play an important role in explaining creativity. There were no significant relationships to creative product. When hypotheses were tested about differences in mean self-efficacy among the high-, low-, and medium-creativity group, a marginally significant difference was found between the high- and low-creativity groups. Therefore, the results suggest that self-efficacy is not an important facilitator of creativity.

It was expected that bottom-up thinking would have both a positive influence on originality and a negative influence on usefulness; the results supported this expectation. When participants left the path of least resistance and engaged in more bottom-up thinking, the solutions became more original but less useful and aesthetic. The effects of conceptual combination on originality and aesthetics were not significant, but in line with expectations, conceptual combination had a positive effect on usefulness. Prior research has explained and operationalized creative processing in many ways, and it is clearly a difficult-to-measure concept. Ward et al. (1999) described the creative process in their Geneplore model: When faced with a problem, a person will first generate a set of candidate ideas, followed by extensive exploration of those ideas. The first part of the process is what Wallace (1926) labeled preparation and illumination, and the last part may be thought of as illumination and verification. The current research uses existing measures for the bottom-up thinking dimension (adapted from Moreau and Dahl, 2005) and new measures for conceptual combination. Bottom-up thinking is a measure designed to capture the extent to which the consumer leaves the path of least resistance and focuses on how consumers search for attributes and alternatives. Measures for conceptual combination were developed for this study; they include observations of the types of considerations participants came up with during decision making and the uniqueness of those considerations. This reflects the last stages in the creative process (exploration of ideas to fit a problem) and thus pertains more to the quality of the evaluation of ideas than to the generation of ideas. In this context, a positive effect on usefulness seems logical.

Surprisingly, a negative effect of the interaction between knowledge and conceptual combination on originality was found. This implies that at the same level of conceptual combination, originality will decrease as knowledge increases. The expectation was that the opposite would be true—that more knowledge would facilitate a more original solution under high levels of conceptual combination. A potential explanation for this is that when people conduct a broader search and score high on conceptual combination, knowledge may increase their likelihood of arriving at a mainstream solution. People with less knowledge have less experience and may be less able to identify an ordinary solution. Thus, additional research is needed to understand the processes underlying this finding.

A finding that serves to support this explanation is the significant, negative effect of the interaction between knowledge and conceptual combination on originality. A broader search that takes more considerations into account, combined with more knowledge, increases the likelihood that a person will suggest a less original solution.

Consistent with Moreau and Dahl's (2005) findings, this research provide evidence for a positive relationship between bottom-up thinking and originality. Furthermore, a significant, negative effect on usefulness and aesthetics was found. This indicates that as people leave the path of least resistance, they are more likely to suggest a more original, but less useful, solution. However, the negative effect on usefulness was mitigated when participants were highly motivated. The significant, positive effect of the interaction between motivation and bottom-up thinking on usefulness suggests that solutions are most useful at high levels of motivation and bottom-up thinking. This finding is noteworthy because it suggests that creative cognitive processing facilitates usefulness for highly motivated people but undermines usefulness for less motivated people.

Taken together, the findings presented herein suggest that motivation, knowledge, and innovativeness are important facilitators of creative production in a consumption setting and that the different aspects of creative cognitive processing have differential influences on the three creative product dimensions. Further research is needed to understand the processes underlying the findings.

## **8.5 Creative cognitive processing and creative product will influence solution evaluation**

Burroughs and Mick (2004) found that acting creatively enhances positive affect in a decision situation. The good mood resulting from positive affect is likely to influence how consumers evaluate the outcome of the decision process. Furthermore, creative solutions are considered attractive, and

this research proposed that when people evaluate their own solutions, more creative solutions lead them to evaluate the solution more positively. Solution evaluation was measured by having participants re-evaluate their own solution and answer questions about attractiveness and purchase intentions. It is likely that all participants will evaluate their solutions positively (after all, it is their own suggestion they are evaluating). The results showed that conceptual combination, originality, and aesthetics had a significant, positive influence on solution evaluation. Conceptual combination represents the extent to which consumers searched more and more varied categories of knowledge related to their own needs during decision making. By performing a broader search, the results suggest that participants were able to come up with solutions more to their own liking. Furthermore, creative product was assessed by independent judges. The solutions these judges considered more original and more aesthetic were also evaluated more positively by the participants, suggesting that more creative solutions are also more attractive to the creators themselves.

## **8.6 Contributions and implications**

This research contributes by putting forth a framework for understanding consumption as a creative act. It also contributes by providing insight into how people respond creatively to mundane, everyday problems. The literature on consumer creativity is limited to creativity in constrained situations, and therefore the current research contributes by providing insight into creativity in less constrained situations. This section summarizes the main contributions and implications of this research. Contributions to creativity research are first discussed, followed by contributions to consumer research and, finally, implications for managers.

### **8.6.1 Contributions to creativity research**

Researchers (e.g., Lubart, 1994) have pointed out the lack of creativity research in real-world settings. A reason for this may be that creativity, according to its definition (it is original), is rare and that studying creativity in less constrained, real-world settings necessarily produces less variation in creativity than in a controlled, constrained environment, and therefore relationships are more difficult to detect. This research represents a contribution to creativity research by focusing on creativity in a real-world setting.

Another contribution is the validation of each of the creativity concepts and their independence from one another. When faced with the dinner problem, people were able to suggest solutions that were judged creative without engaging in high levels of creative processing during decision making. Participants who did engage in high levels of creative processing often ended up suggesting a less

creative solution. This underscores the importance of separating the creative process and creative product when investigating creativity in real-world settings.

Adding to previous research, this study contributes by showing that the creative product is best studied as a multidimensional construct. By separating the dimensions of creative production, perhaps conflicting results in previous research on the relationships between knowledge and creativity (e.g., Weisberg, 1999) and between motivation and creativity (e.g., Amabile, 1996) can be resolved. This research shows that the influence of antecedents on different dimensions may have opposite signs, and this in itself may cause problems when interpreting the form on the relationships. In addition, this research demonstrate that categorizing the creativity variable provides a more valid measure than using a formative (i.e., additive) measurement model.

As part of this research, a scale for creativity assessment to solutions to consumption problems was developed and validated. This represents a contribution to the field because it makes available valid and reliable measures.

Finally, the creativity framework proposed herein shows promising results in terms of construct validity. This indicates that creativity theory may be applied to understand this type of real-world problem solving and that people do respond creatively, at least to some extent, to mundane problems in unconstrained settings.

### **8.6.2 Contributions to consumer research**

This research contributes to consumer research by applying a creativity framework to understand consumer decision making. Previous research has focused on consumer creativity in constrained settings. An important proposition in this research was that consumers will also act as creative problem solvers in situations with fewer constraints and that a creativity framework can be applied to understand problem solving in such situations. The results indicate that this is a valid conception.

It has previously been proposed that creativity in solutions to consumption problems should be conceptualized as a three-dimensional construct, but this has not been tested empirically previously. This research contributes by demonstrating that such conceptualization is valid and reliable. The creative product assessment scale is a contribution to consumer research as well because it provides a tool for researchers interested in investigating creative production in the realm of consumption.

Because little research has tested hypotheses on the relationships among psychological facilitators of creativity, processing, and production in unconstrained consumption situations, the results presented herein represent an additional contribution to the understanding of consumer decision

making. Particularly, this study found that knowledgeable consumers are more likely to engage in creative processing during decision making and to end up choosing a more creative solution. In addition, motivated consumers search their memory for information in a broader and more unique set of categories than less motivated consumers.

Moreau and Dahl (2005, p. 21) found that situation and person factors, such as motivation, involvement, confidence, knowledge, and intelligence, are moderators of the creative process and that “these important factors will exert their influence through or in conjunction with the cognitive processes”. This research adds to the literature by providing evidence in support of Moreau and Dahl’s suggestion that knowledge and motivation are moderators of the creative process.

Finally, creative cognitive processing and creative production enhanced participants’ solution evaluation. Previous research have demonstrated a positive effect of creativity on consumers’ affective responses, but little research has shown that acting creatively and producing creative solutions enhances consumers’ own evaluations of those solutions.

### **8.6.3 Implications for managers**

Concerns for managerial implications have a long tradition in marketing, and research in this field is partially evaluated on its ability to provide useful advice that will help managers increase market share, profitability, satisfaction, or loyalty. Because the current research is mainly focused in the context of discovery, it is difficult to pinpoint findings that suggest concrete advice for managerial practice. However, this research highlights important phenomena and demonstrates relationships that may become relevant in the future for better understanding consumers. The most important implication is that creativity is a worthwhile dimension to consider when evaluating variations in consumer decision making. Variations in creative processing occurred during decision making, and knowledge, motivation, and innovativeness helped explain some of these variations. Moreover, evaluation and purchase intentions increased when consumers engaged in creative processing and produced more creative solutions. Managers may want to consider the extent to which their target customers are likely to engage in more or less creative processing and to tailor their marketing strategies accordingly. Further research is needed before any practical advice can be given in this respect.

### **8.7 Directions for future research**

Research on consumer creativity is young, and the field is open to many avenues of future inquiry. The idea that consumers are creative and active participants should be explored further and



extended into research with a practical focus. A question to explore is how marketers can use creativity as a variable in market segmentation. Currently, markets are largely segmented on the basis of demographic, psychographic, and behavioral variables. This research demonstrates variability in both creative processing and creative production, and if marketers can identify their consumers according to their creativity, they may be able to tailor their marketing strategies more effectively.

Another avenue of pursuit would be to develop a better understanding of the relationships among innovativeness, new product adoption, and creativity. This research found that innate innovativeness did not lead to higher levels of creativity on average, but the results revealed that domain-specific innovativeness may be an important antecedent to creative processing and in predicting creative solutions. Thus, it would be worthwhile to explore whether creativity can mediate the effects of domain-specific innovativeness on new product adoption.

There is a growing body of literature on consumer participation in product development processes. Henry Ford's famous statement "If I had asked my customers what they wanted, they would have said a faster horse" may apply to the average customer, but if creativity is taken into account, companies may be able to find customers who are able to contribute positively to the development of new products. Further research is needed to understand how and when consumers are able to contribute, and creativity may be an important variable in this process.

Many relationships have been identified in this research, but less emphasis has been placed on understanding the processes underlying these relationships. One avenue of future research lies in uncovering these processes to better explain the relationships identified herein.

In addition, future research should be conducted to develop a better understanding and better measures of the creative process in unconstrained consumption situations. This research focused on two aspects of creative cognitive processing. First, bottom-up thinking measured creative processing as a search through knowledge about products and attributes, a dimension that reflects the generative stages of the creative process. Second, conceptual combination measured creative processing as a search through different categories of needs or requirements, a dimension that reflects the more evaluative stages of the creative process. Research is needed to better understand the different aspects of the creative process, their antecedents, and their consequences.

Finally, some possibilities for future research exist in the areas of validation and measurement development. The setting investigated herein pertained to consumers' decision about what to serve

friends who came over for dinner. However, it is not known whether the results will transfer to other settings, and therefore future research could explore this in greater depth.

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## **Appendix 1: Creativity assessment scales**

| (Amabile, 1982b)  |  |  |
|---|--|--|
| Description of procedure  | Dimensions and Items:<br><b>Artistic creativity</b>  | Dimensions and items<br><b>Verbal creativity</b>   |
| 12 independent judges were presented with artistic work in random order, and asked to give their subjective assessment of each work's creativity, technicality and aesthetics relative to the other works presented (not to some absolute standard of art). E.g., for the creative dimension: "using your own, subjective definition of creativity, assess the degree to which the design/text is creative relative to the other designs presented". The judges were asked to place the design on five point scales labelled "high", "medium" and "low". They were also asked to rank the designs/texts on each dimension from highest to lowest. | <b>Creativity dimension</b><br>Creativity<br>Novel use of materials<br>Novel idea<br>Effort evident<br>Variation in shapes<br>Detail<br>Complexity   | <b>Creativity dimension</b><br>Creativity<br>Novelty of word choice<br>Originality of idea<br>Sophistication<br>Rhythm |
|   | <b>Technical dimension</b><br>Technical goodness<br>Organization<br>Neatness<br>Planning<br>Representationalism<br>Symmetry<br>Expression of meaning   | <b>Technical dimension</b><br>Grammar<br>Use of form   |
|   | <b>Aesthetic dimension</b><br>Liking<br>Aesthetic appeal<br>Would you display it?  | <b>Style dimension</b><br>Clarity<br>Appropriateness<br>Consistency  |
| (Runco and Charles, 1993b)  |  |  |
| The purpose of the study was to assess the degree of correlation between objective and subjective assessments of creativity. Having developed nine clusters of ideas, with 8 ideas in each, independent judges were asked to rank the ideas by placing them in one of five stacks ranging from least original, creative, appropriate to most original, creative, appropriate.   | Subjects were instructed to rank ideas according to degree of originality in five stacks from not at all original/appropriate/creative to highly original/appropriate/creative.<br><b>Originality dimension:</b> The instructions were: "an original idea is one which is unusual or novel. It may be entirely unique and in any case is one which other people would not be likely to think of"<br><b>Appropriateness dimension:</b> The instructions were: "An appropriate idea is one that is fitting: an idea which meets the criteria specified by the specific question on the instances test. If the tasks on the instances test are each viewed as a problem, an appropriate idea should solve the problem"<br><b>Creativity dimension:</b> "We realize that creativity doesn't exist in a vacuum, and to some extent creativity probably overlaps other criteria one might apply. However, we are asking you to rank the ideas solely on the basis of your own subjective opinion of creativity. You need not defend your choices or articulate a definition of creativity" |  |
| (Besemer and O'Quin, 1986b)   |  |  |
| Tests a 70 item, 13 factor scale of assessment of creativity in new products – the Creative Product Semantic Scale (CPSS). 133 students analysed 2 t-shirts <i>separately</i> .   | <b>Novelty: three subscales:</b><br><b>Original (alpha = .87, .89)</b><br><b>Surprising (alpha = .88 for both products)</b><br><b>Germinal (alpha = .69, .70)</b><br><b>Resolution – three subscales:</b><br><b>Valuable (alpha = .84, .77)</b>  |  |

|   |  |
|---|--|
| <p>The reliability of the scale was assessed using the 133 responses on the two t-shirts. The coefficient alphas ranged from .69-.91</p>  | <p><b>Logical (alpha = .75, .85)</b><br/> <b>Useful (alpha .80, .84)</b><br/> <b>Elaboration and Synthesis – five subdimensions</b><br/> <b>Organic (alpha .80, .87)</b><br/> <b>Elegant (alpha = .85, .83)</b><br/> <b>Complex (alpha = .79, .75)</b><br/> <b>Understandable (alpha = .72, .83)</b><br/> <b>Well-crafted (alpha = .91, .91)</b></p> |
| <p>(Burroughs and Mick, 2004)</p>   |  |
| <p>Torrence’s “just suppose” test of creativity: Subjects were asked to come up with a solution to a consumption problem (polish shoes). They wrote down their solution. Two independent judges assessed the creativity of each resposn on 44 of the CPSS items. The scale was reduced to 10 items, and a second order factor model comprised of two first order factors (novelty and functionality) showed good fit. The authors do not report the ten items in the article, but gives examples of two items: Predictable-novel and Functional-nonfunctional</p> |  |
| <p>(Moreau and Dahl, 2005)</p>  |  |
| <p>Three independent judges (professionals) evaluated novelty and appropriateness of the resulting design on six items (7 point scale).</p>   | <p><b>Novelty</b><br/> Not at all original/very original<br/> Not at all innovative/very innovative<br/> Not at all creative/very creative<br/> <b>Functionality</b><br/> Practical (not at all/very)<br/> Effective (not at all/very)<br/> Useful (not at all/very)</p>   |



## **Appendix 2: Besemer's creative product assessment scale**

| Original item  | Norwegian translation   |
|--|---|
| <p><b>Original</b><br/> Exciting-dull<br/> Zippy-bland<br/> Fresh-overused<br/> Eccentric-conventional<br/> New-old<br/> Novel-predictable<br/> Unusual-usual<br/> Unique-ordinary<br/> Original-commonplace</p> | <p>Spennende – kjedelig<br/> Uoversettelig til norsk<br/> Frisk – utbrukt<br/> Eksentrisk – konvensjonell<br/> Ny – gammel<br/> Ukjent – forutsigbar<br/> Uvanlig – vanlig<br/> Unik – ordinær<br/> Original - triviell</p> |
| <p><b>Surprising</b><br/> Startling-stale<br/> Surprising- customary<br/> Astonishing-commonplace<br/> Astounding-common<br/> Shocking-ordinary</p>  | <p>Forbløffende – uinteressant<br/> Overraskende – sedvanlig<br/> Forbløffende – uniteressant<br/> Fremstående – allminnelig<br/> Sjokkerende - ordinær</p>   |
| <p><b>Germinal</b><br/> Trendsetting – warmed over<br/> Revolutionary – average<br/> Radical – old hat</p>   | <p>Trendsettende – utbrent<br/> Revulosjonært – gjennomsnittlig<br/> Radikalt - utdatert</p>  |
| <p><b>Valuable</b><br/> Priceless-worthless<br/> Valuable-worthless<br/> Important-unimportant<br/> Significant-insignificant<br/> Essential-inessential<br/> Necessary-unnecessary</p>                          | <p>Uvurderlig – verdiløs<br/> Har samme mening som forrige item<br/> Viktig – uviktig<br/> Betydningsfull – ubetydelig<br/> Vesentlig – uvesentlig<br/> Nødvendig - unødvendig</p>  |
| <p><b>Logical</b><br/> Logical-illogical<br/> Makes sense-senseless<br/> Correct-incorrect<br/> Relevant-irrelevant<br/> Appropriate-inappropriate<br/> Adequate-inadequate</p>                                  | <p>Logisk – ulogisk<br/> Meningsfull – meningsløs<br/> Korrekt – feil<br/> Relevant – irrelevant<br/> Nødvendig – unødvendig<br/> Tilstrekkelig - utilstrekkelig</p>  |
| <p><b>Useful</b><br/> Effective-ineffective<br/> Functional-nonfunctional<br/> Feasible-unfeasible<br/> Operable-inoperable</p>  | <p>Effektiv – ineffektiv<br/> Funksjonell – ikke funksjonell<br/> Gjennomførbar – ikke gjennomførbar<br/> Ikke oversettelig i denne sammenheng</p>  |



|   |  |
|---|--|
| Useful-useless<br>Workable-unworkable<br>Usable-unusable<br><br>Durable-flimsy<br><br><br>Substantial-insubstantial   | Brukelig – ubrukelig<br>Vil fungere – vil ikke fungere<br>I oversettelse betyr det same som useful -<br>useless<br>Forslag til løsn på forbrukerproblemer er i seg<br>selv forgjengelige i og med at de skal forbrukes.<br>Item derfor overflødig i denne sammenheng<br>Betydelig - ubetydelig |
| <b>Organic</b><br>Orderly-disorderly<br>Arranged-disarranged<br>Organized-disorganized<br>Formed-formless<br>Complete-incomplete<br>Whole-partial<br>Sufficient-insufficient<br>Perfect-imperfect | Ryddig – rotete<br>Velordnet – rotete<br>Velorganisert - uorganisert<br>Ikke relevant i denne settingen<br>Komplett – ukomplett<br>Hel – delvis<br>Tilstrekkelig – ikke tilstrekkelig<br>Perfekt - uperfekt  |
| <b>Elegant</b><br>Harmonious-jarring<br>Graceful-awkward<br>Charming-repelling<br>Elegant-coarse<br>Attractive-unattractive   | Harmoniserer – skurrer<br>Grasiøs – klossete<br>Sjarmerende – frastøtende<br>Elegant – grov<br>Tiltrekkende - utiltrekkende  |
| <b>Complex</b><br>Intricate-simple<br>Complex-simple<br>Ornate-plain<br>Complicated-straightforward<br>Interesting-boring   | Denne delen kuttes ut, ettersom det er uklart<br>hva som egentlig representerer det kreative (det<br>enkle eller det komplekse?) Dette er ikke enkelt<br>å få tak i ved å lese det Besemer selv skriver om<br>det  |
| <b>Understandable</b><br>Meaningful-meaningless<br>Understandable-mysterious<br>Intelligible-unintelligible<br>Clear-ambiguous<br>Explicit-implicit<br>Self-explanatory-unexplained               | Meningsfullt – meningsløst<br>Har på norsk lik betydning som neste item<br>Forståelig – uforståelig<br>Klar – tvetydig<br>Eksplisitt - implisitt<br>Selvforklarende - uforklarlig  |
| <b>Well-crafted</b><br>Skillful-bungling<br>Well-made – botched<br>Well crafted – crude   | Talentfull – klossete<br>Vellaget – slurvete<br>Har på norsk lik betydning som forrige item  |



## **Appendix 3: Questionnaire for scale development study**

## Tusen takk for at du bidrar til mitt doktorgradsarbeide!

Alle som fyller ut hele skjemaet kan delta i trekningen  
av 2 reisegavekort til verdi av 1500 kr hver.

### Hvor kreative er forslagene

I denne pakken vil du få presentert 2 forslag til middager. Din oppgave blir å vurdere hvor kreative hvert av forslagene er, sett i forhold til det andre forslaget.

Når du vurderer kreativiteten skal du huske at det er *din subjektive* oppfatning av kreativitet du skal bruke, og du skal huske at vurderingen skal *gjøres i forhold til det andre forslaget*, ikke mot en standard som "det mest kreative man kan tenke seg i hele verden".

Du vil først bli bedt om å rangere de to forslagene innen hvert område i forhold til hvor innovative og gjennomførbare de er. Etter dette skal du plassere hvert forslag på skalaene som presenteres.

## ***Det er viktig at du leser teksten under svært nøye***

To studenter fikk i oppdrag å komme med forslag til en middag de selv ville tilberede og servere til den andre på hybelkjøkkenet sitt. Kjøkkenet har bare en liten komfyr med ødelagt termostat (ovnen kan ikke bli varmere enn 100 grader). Denne deler de med 15 andre studenter, de vil bli svært upopulære om de okkuperer ovnen for lenge. Det er slutten av semesteret og studielånet er oppbrukt, de har derfor svært dårlig råd.

### **Forslag 1:Sushi (rå fisk) med ris**

Sushien kjøpes ferdig hos fiskehandleren nede i gata. Pris pr porsjon ca 95 kroner

### **Forslag 2: Skinkestek med surkål**

Skinkesteken trenger 4-5 timer i stekovnen på grunn av den ødelagte termostaten. Pris pr porsjon ca kr 75,-

## ***Det er viktig at du har lest forslagene så godt at du føler du kjenner dem skikkelig.***

### **Attraktivitet**

Først vil vi vite hvor attraktive de ulike forslagene er for deg. Ta hensyn til alle aspekter ved forslagene. Sett ring rundt det alternativet som best stemmer med din oppfatning:

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| Hvor attraktivt synes du hvert forslag er? (1 = svært lite attraktivt, 7= svært attraktivt)   |   |   |   |   |   |   |   |
| Sushi   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Skinkestek  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Hvor sannsynlig er det at du ville stemme for å servere hver av middagene hvis det var deg og 3 av dine medstudenter som skulle spise sammen? (1 = svært lite sannsynlig, 7 = svært sannsynlig) |   |   |   |   |   |   |   |
| Sushi   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Skinkestek  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Hvor sannsynlig er det at du ville velge å spise en middag som dette en eller annen gang? (1 = svært lite sannsynlig, 7 = svært sannsynlig)   |   |   |   |   |   |   |   |
| Sushi   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Skinkestek  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

### **Originalitet**

Med originalitet mener vi at forslaget er nytt, originalt. Det trenger ikke nødvendigvis være svært innovativt i forhold til alle tenkelige forhold, men det bør skille seg i noen grad ut i forhold til hva du regner som "vanlige" forslag i denne sjangeren.

I tabellen under skal du rangere forslagene ved å sette tallet "1" ved det forslaget du mener er **mest** originalt, og tallet "2" ved det minst originale.

|            |   |
|------------|---|
|            | Din rangering av originalitet (1 = mest originalt, 2 = minst originalt) |
| Sushi      |   |
| Skinkestek |   |

## Gjennomførbarhet

Med gjennomførbarhet mener vi at forslaget er mulig å gjennomføre gitt de rammer som eksisterer (her: at det er studenter med dårlig råd, at komfyren er liten, delvis defekt og at den ikke kan brukes for lenge om gangen). For at forslaget skal være gjennomførbart bør det tilfredsstillende kravene som stilles (bl.a. lav pris, mulighet for å tilberedes på hybelkjøkkenet). Som i oppgaven over skal du gi tallet 1 til det forslaget som har høyest gjennomførbarhet, og tallet 2 til det som er minst gjennomførbart.

|            | Din rangering av gjennomførbarhet (1 = mest gjennomførbart, 2 = minst gjennomførbart) |
|------------|---|
| Sushi      |   |
| Skinkestek |   |

## Kreativitet

Under er det listet mer enn 50 beskrivelser som du skal vurdere de to forslagene opp mot.

**Husk at det er din subjektive oppfatning vi er ute etter.**

Husk også at **forslagene skal vurderes i forhold til hverandre**, og ikke i forhold til en ekstern standard for kreativitet.

Du vurderer hvert forslag ved å sette et kryss på det stedet på hver skala du mener det hører hjemme. Eksempel: Du mener skinkestek er et middels spennende forslag og du setter krysset slik på skalaen:

|           |  |  |   |  |  |              |
|-----------|--|--|---|--|--|--------------|
| Spennende |  |  | X |  |  | Spenningsløs |
|-----------|--|--|---|--|--|--------------|

|            |              |  |  |  |  |               |
|------------|--------------|--|--|--|--|---------------|
| Sushi      | Spennende    |  |  |  |  | Kjedelig      |
| Skinkestek | Spennende    |  |  |  |  | Kjedelig      |
| Sushi      | Frisk        |  |  |  |  | Utbrukt       |
| Skinkestek | Frisk        |  |  |  |  | Utbrukt       |
| Sushi      | Eksentrisk   |  |  |  |  | Konvensjonell |
| Skinkestek | Eksentrisk   |  |  |  |  | Konvensjonell |
| Sushi      | Ny           |  |  |  |  | Gammel        |
| Skinkestek | Ny           |  |  |  |  | Gammel        |
| Sushi      | Ukjent       |  |  |  |  | Forutsigbar   |
| Skinkestek | Ukjent       |  |  |  |  | Forutsigbar   |
| Sushi      | Uvanlig      |  |  |  |  | Vanlig        |
| Skinkestek | Uvanlig      |  |  |  |  | Vanlig        |
| Sushi      | Unik         |  |  |  |  | Ordinær       |
| Skinkestek | Unik         |  |  |  |  | Ordinær       |
| Sushi      | Original     |  |  |  |  | Triviell      |
| Skinkestek | Original     |  |  |  |  | Triviell      |
| Sushi      | Forbløffende |  |  |  |  | Uinteressant  |
| Skinkestek | Forbløffende |  |  |  |  | Uinteressant  |
| Sushi      | Overraskende |  |  |  |  | Sedvanlig     |
| Skinkestek | Overraskende |  |  |  |  | Sedvanlig     |

|            |                |  |  |  |  |                  |
|------------|----------------|--|--|--|--|------------------|
| Sushi      | Fremstående    |  |  |  |  | Alminnelig       |
| Skinkestek | Fremstående    |  |  |  |  | Alminnelig       |
| Sushi      | Sjokkerende    |  |  |  |  | Ordinær          |
| Skinkestek | Sjokkerende    |  |  |  |  | Ordinær          |
| Sushi      | Trendsettende  |  |  |  |  | Gammeldags       |
| Skinkestek | Trendsettende  |  |  |  |  | Gammeldags       |
| Sushi      | Revolusjonært  |  |  |  |  | Gjennomsnittlig  |
| Skinkestek | Revolusjonært  |  |  |  |  | Gjennomsnittlig  |
| Sushi      | Radikalt       |  |  |  |  | Utdatert         |
| Skinkestek | Radikalt       |  |  |  |  | Utdatert         |
| Sushi      | Uvurderlig     |  |  |  |  | Verdiløst        |
| Skinkestek | Uvurderlig     |  |  |  |  | Verdiløst        |
| Sushi      | Viktig         |  |  |  |  | Uviktig          |
| Skinkestek | Viktig         |  |  |  |  | Uviktig          |
| Sushi      | Betydningsfull |  |  |  |  | Ubetydelig       |
| Skinkestek | Betydningsfull |  |  |  |  | Ubetydelig       |
| Sushi      | Vesentlig      |  |  |  |  | Uvesentlig       |
| Skinkestek | Vesentlig      |  |  |  |  | Uvesentlig       |
| Sushi      | Nødvendig      |  |  |  |  | Unødvendig       |
| Skinkestek | Nødvendig      |  |  |  |  | Unødvendig       |
| Sushi      | Logisk         |  |  |  |  | Ulogisk          |
| Skinkestek | Logisk         |  |  |  |  | Ulogisk          |
| Sushi      | Meningsfull    |  |  |  |  | Meningsløs       |
| Skinkestek | Meningsfull    |  |  |  |  | Meningsløs       |
| Sushi      | Korrekt        |  |  |  |  | Feil             |
| Skinkestek | Korrekt        |  |  |  |  | Feil             |
| Sushi      | Relevant       |  |  |  |  | Irrelevant       |
| Skinkestek | Relevant       |  |  |  |  | Irrelevant       |
| Sushi      | Tilstrekkelig  |  |  |  |  | Utilstrekkelig   |
| Skinkestek | Tilstrekkelig  |  |  |  |  | Utilstrekkelig   |
| Sushi      | Effektiv       |  |  |  |  | Ineffektiv       |
| Skinkestek | Effektiv       |  |  |  |  | Ineffektiv       |
| Sushi      | Funksjonell    |  |  |  |  | Dysfunksjonell   |
| Skinkestek | Funksjonell    |  |  |  |  | Dysfunksjonell   |
| Sushi      | Gjennomførbar  |  |  |  |  | Ugjennomførbar   |
| Skinkestek | Gjennomførbar  |  |  |  |  | Ugjennomførbar   |
| Sushi      | Brukbar        |  |  |  |  | Ubrukelig        |
| Skinkestek | Brukbar        |  |  |  |  | Ubrukelig        |
| Sushi      | Vil fungere    |  |  |  |  | Vil ikke fungere |
| Skinkestek | Vil fungere    |  |  |  |  | Vil ikke fungere |
| Sushi      | Ryddig         |  |  |  |  | Rotete           |
| Skinkestek | Ryddig         |  |  |  |  | Rotete           |
| Sushi      | Velordnet      |  |  |  |  | Uordentlig       |
| Skinkestek | Velordnet      |  |  |  |  | Uordentlig       |
| Sushi      | Velorganisert  |  |  |  |  | Uorganisert      |
| Skinkestek | Velorganisert  |  |  |  |  | Uorganisert      |
| Sushi      | Komplett       |  |  |  |  | Ukomplett        |
| Skinkestek | Komplett       |  |  |  |  | Ukomplett        |
| Sushi      | Hel            |  |  |  |  | Delvis           |
| Skinkestek | Hel            |  |  |  |  | Delvis           |
| Sushi      | Perfekt        |  |  |  |  | Uperfekt         |
| Skinkestek | Perfekt        |  |  |  |  | Uperfekt         |
| Sushi      | Harmonerer     |  |  |  |  | Skurrer          |



|            |                 |  |  |  |  |  |               |
|------------|-----------------|--|--|--|--|--|---------------|
| Skinkestek | Harmonerer      |  |  |  |  |  | Skurrer       |
| Sushi      | Grasiøs         |  |  |  |  |  | Klossete      |
| Skinkestek | Grasiøs         |  |  |  |  |  | Klossete      |
| Sushi      | Sjarmerende     |  |  |  |  |  | Usjarmerende  |
| Skinkestek | Sjarmerende     |  |  |  |  |  | Usjarmerende  |
| Sushi      | Elegant         |  |  |  |  |  | Grov          |
| Skinkestek | Elegant         |  |  |  |  |  | Grov          |
| Sushi      | Tiltrekkende    |  |  |  |  |  | Utiltrekkende |
| Skinkestek | Tiltrekkende    |  |  |  |  |  | Utiltrekkende |
| Sushi      | Forståelig      |  |  |  |  |  | Uforståelig   |
| Skinkestek | Forståelig      |  |  |  |  |  | Uforståelig   |
| Sushi      | Klar            |  |  |  |  |  | Tvetydig      |
| Skinkestek | Klar            |  |  |  |  |  | Tvetydig      |
| Sushi      | Eksplisitt      |  |  |  |  |  | Implisitt     |
| Skinkestek | Eksplisitt      |  |  |  |  |  | Implisitt     |
| Sushi      | Selvforklarende |  |  |  |  |  | Uforklarlig   |
| Skinkestek | Selvforklarende |  |  |  |  |  | Uforklarlig   |
| Sushi      | Talentfull      |  |  |  |  |  | Klossete      |
| Skinkestek | Talentfull      |  |  |  |  |  | Klossete      |
| Sushi      | Vellaget        |  |  |  |  |  | Slurvete      |
| Skinkestek | Vellaget        |  |  |  |  |  | Slurvete      |

Og så, helt til slutt:

Hva tror du dette forskningsprosjektet dreier seg om?.....

Jeg skal trekke ut i alt 2 reisegavekort til en verdi av 1500 kr hver blant de som har bidratt i dette prosjektet. Skriv navn, telefonnr og e-postadresse under hvis du vil være med i trekningen.

Navn..... Tlf.....

E-postadr.....

**Tusen takk igjen**

**Ditt bidrag er virkelig av stor betydning for meg i min forskning.**



## **Appendix 4: Questionnaire for main study**

**Tusen takk for at du bidrar til mitt  
doktorgradsarbeide!**

Alle som fyller ut hele skjemaet kan delta i trekningen  
av 2 reisegavekort til verdi av 1500 kr hver.

Vennlig hilsen Marit G Engeset

## Del 1: Forslag til reise og middag

På plassen under skal du beskrive et forslag til en ferie i en langweekend (torsdag til søndag). Tenk deg at du og tre medstudenter skal unne dere en frihelg etter å ha jobbet hardt med skolearbeidet. Dere har ikke spesielt god råd, og dere er først og fremst ute etter å oppleve noe nytt og annerledes. Du skal komme med forslag til en slik tur. Forslaget skal inneholde: Reisemål, hvordan dere skal komme dere dit, hvilken type overnatting dere skal ha og ulike aktiviteter dere kan delta på.

**Forslag til reise: Sted, transport, overnatting, aktiviteter**

På plassen under skal du beskrive et forslag til en middag for deg selv og dine tre medstudenter. Tenk deg at dere skal unne dere en hyggelig kveld med god mat etter å ha jobbet hardt med skolearbeidet. Du skal lage middagen. Dere har ikke spesielt god råd. Du skal foreslå hva du vil servere ved en slik anledning.

**Forslag til middag**

## **Del 2: Hvordan fikk du ideene til reise og middag?**

Du skal nå beskrive hvordan du tenkte da du kom frem til forslagene dine til langweekend og middag. Hva la du vekt på, hvilke deler av forslaget bestemte du først og sist osv.

**Hvordan du tenkte når du kom med forslag til reise:**

**Hvordan du tenkte når du kom med forslaget til middag**

### Del 3: Spørsmål om dine kunnskaper og interesser for matlaging og reiser

I denne delen skal du svare på spørsmål om hvor mye du kan om matlaging og reiser. For hvert spørsmål skal du krysse av på en tallskala. Disse tallene tolkes slik: -3 = svært mye mindre, -2 = Mye mindre, -1 = Litt mindre 0 = Omtrent like mye, 1 = Litt mer, 2 = Mye mer, 3= Svært mye mer

| Hvor mye kunnskap, i forhold til andre, opplever du at du har om det å <b>lage middag?</b>  |    |    |    |   |   |   |   |
|---|----|----|----|---|---|---|---|
| Dine kunnskaper i forhold til gjennomsnittet av norske kvinner og menn  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til landets beste kokker  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til dine medstudenter   | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Hvor mye kunnskap, i forhold til andre, opplever du at du har om <b>ulike middagsretter?</b> Med "middagsrett" menes for eksempel kjøttkaker. |    |    |    |   |   |   |   |
| Dine kunnskaper i forhold til gjennomsnittet av norske kvinner og menn  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til landets beste kokker  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til dine medstudenter   | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Hvor mye kunnskap, i forhold til andre, opplever du at du har om det å <b>planlegge en ferie/fritidsreise</b>                                 |    |    |    |   |   |   |   |
| Dine kunnskaper i forhold til gjennomsnittet av norske kvinner og menn  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til landets beste reiseplanleggere  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til dine medstudenter   | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Hvor mye kunnskap, i forhold til andre, opplever du at du har om <b>ulike reisemål?</b>   |    |    |    |   |   |   |   |
| Dine kunnskaper i forhold til gjennomsnittet av norske kvinner og menn  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til landets beste reiseplanleggere  | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Dine kunnskaper i forhold til dine medstudenter   | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

| Hvor mange forskjellige typer middagsretter har du spist i løpet av de siste 3 ukene? (med middagsrett menes for eksempel kjøttkaker). Kryss av for det alternativet som passer best |  |  |   |  |   |                       |
|--|--|--|---|--|---|-----------------------|
| Har stort sett spist det samme   | Har variert mellom 2-4 forskjellige retter | Har variert mellom 5-7 forskjellige retter | Har variert mellom 8-10 forskjellige retter | Har variert mellom 11-13 forskjellige retter | Har variert mellom 14 eller flere forskjellige retter | Har ikke spist middag |
| Hvor ofte lager du selv middagen du spiser? Kryss av for det alternativet som passer best  |  |  |   |  |   |                       |
| Aldri  | Sjeldnere enn 1/4 av tiden                 | Mellom ¼ og ½ av tiden                     | Omtrent ½ av tiden                          | Mellom ½ og ¾ av tiden                       | Over ¾ av tiden                                       | Spiser ikke middag    |

| Hvor mange forskjellige reisemål har du besøkt i i løpet av de siste tre årene (ett reisemål er et sted der du har overnattet minst 1 natt i forbindelse med en ferietur. Ofte kan en feriereise bestå av flere reisemål. Du skal telle med alle) |                  |                  |                         |                           |                           |                             |
|---|------------------|------------------|-------------------------|---------------------------|---------------------------|-----------------------------|
| 1   | 2-3 forskjellige | 4-5 forskjellige | 6-7 forskjellige        | 8-9 forskjellige          | Mer enn 9 forskjellige    | Har ikke vært på ferie      |
| Hvor mange ferie/fritidsreiser har du selv hovedansvaret for å planlegge de siste tre årene? (tell med alle reiser, også de du selv ikke har vært med på)   |                  |                  |                         |                           |                           |                             |
| Ingen   | 1-3 reiser       | 4-6 reiser       | 7-9 forskjellige reiser | 10-12 forskjellige reiser | 13-15 forskjellige reiser | Over 15 forskjellige reiser |

For hver av påstandene under skal du krysse av på det alternativet som best stemmer overens med din oppfatning. Skalaen tolkes slik: -3 = 100% uenig; -2 = Ganske uenig; -1 = litt uenig, 0 = verken enig eller uenig; 1 = litt enig; 2 = ganske enig; 3 = 100% enig. Dersom svaret ikke er relevant for deg (for eksempel fordi du aldri utfører aktiviteten vi spør om), krysser du av på spørsmålstegnet

| Hva er vanligvis de viktigste årsakene til at du <b>lager middag</b> ?     |    |    |    |   |   |   |   |   |
|--|----|----|----|---|---|---|---|---|
| Fordi jeg synes det er interessant   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi jeg liker det  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det er moro  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det får meg til å føle meg vel                                       | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Hva er vanligvis de viktigste årsakene til at du <b>spiser middag</b> ?    |    |    |    |   |   |   |   |   |
| Fordi jeg synes det er interessant   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi jeg liker det  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det er moro  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det får meg til å føle meg vel                                       | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Hva er vanligvis de viktigste årsakene til at du <b>planlegger ferie</b> ? |    |    |    |   |   |   |   |   |
| Fordi jeg synes det er interessant   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi jeg liker det  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det er moro  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det får meg til å føle meg vel                                       | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Hva er vanligvis de viktigste årsakene til at du <b>reiser på ferie</b> ?  |    |    |    |   |   |   |   |   |
| Fordi jeg synes det er interessant   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi jeg liker det  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det er moro  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Fordi det får meg til å føle meg vel                                       | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |



For hver av påstandene under skal du krysse av på det alternativet som best stemmer overens med din oppfatning. Skalaen tolkes slik: -3 = 100% uenig; -2 = Ganske uenig; -1 = litt uenig, 0 = verken enig eller uenig; 1 = litt enig; 2 = ganske enig; 3 = 100% enig. Dersom svaret ikke er relevant for deg (for eksempel fordi du aldri utfører aktiviteten vi spør om), krysser du av på spørsmålstegnet

|  |    |    |    |   |   |   |   |   |
|--|----|----|----|---|---|---|---|---|
| Jeg kommer aldri til å forstå meg på middagslaging   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg tror bare noen få eksperter virkelig forstår hvordan de skal lage middag   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg opplever det som ekstremt vanskelig å lære å lage middag   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Dersom det oppstår en feil mens jeg lager middag er det svært vanskelig for meg å rette feilen opp igjen                         | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg kommer aldri til å forstå meg på det å planlegge reiser  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg tror bare noen få eksperter virkelig forstår hvordan de skal planlegge reiser  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg opplever det som ekstremt vanskelig å lære å planlegge reiser  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Dersom det oppstår en feil mens jeg planlegger reiser er det svært vanskelig for meg å rette feilen opp igjen                    | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg kommer aldri til å forstå meg på hvordan jeg skal velge hva jeg skal spise til middag  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg tror bare noen få eksperter virkelig forstår hvordan de skal velge middagsretter   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg opplever det som ekstremt vanskelig å lære å velge hva jeg skal spise til middag   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Dersom det oppstår en feil mens jeg velger hva jeg skal spise til middag er det svært vanskelig for meg å rette feilen opp igjen | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg kommer aldri til å forstå meg på hvordan jeg skal velge reisemål   | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg tror bare noen få eksperter virkelig forstår hvordan de skal velge reisemål  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Jeg opplever det som ekstremt vanskelig å lære å velge hvor jeg skal reise på ferie  | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |
| Dersom det oppstår en feil mens jeg velger reisemål er det svært vanskelig for meg å rette feilen opp igjen                      | -3 | -2 | -1 | 0 | 1 | 2 | 3 | ? |

Hvor treffende opplever du at hver av beskrivelsene under er for din personlighet? Kryss av på det alternativet som best stemmer overens med din oppfatning: -2 = Er ingen god beskrivelse av min personlighet; -1 = Beskriver min personlighet i liten grad; 0 = Beskriver min personlighet i noen grad; 1 = er en ganske god beskrivelse av min personlighet; 2 = er en svært treffende beskrivelse av min personlighet.

|  |    |    |   |   |   |
|--|----|----|---|---|---|
| Har originale ideer  | -2 | -1 | 0 | 1 | 2 |
| Håndterer mange ideer på samme tid                                     | -2 | -1 | 0 | 1 | 2 |
| Har nye perspektiver på gamle problemer                                | -2 | -1 | 0 | 1 | 2 |
| Er stimulerende  | -2 | -1 | 0 | 1 | 2 |
| Vil alltid finne på noe når jeg står fast                              | -2 | -1 | 0 | 1 | 2 |
| Er i stand til å stå for mine meninger selv om andre er uenige med meg | -2 | -1 | 0 | 1 | 2 |
| Vil heller skape noe nytt enn å forbedre det eksisterende              | -2 | -1 | 0 | 1 | 2 |
| Liker å bryte etablerte rutiner på kort varsel                         | -2 | -1 | 0 | 1 | 2 |
| Trenger stimulansen jeg kan få fra hyppig endring                      | -2 | -1 | 0 | 1 | 2 |
| Tar ofte sjansen på å gjøre ting annerledes                            | -2 | -1 | 0 | 1 | 2 |
| Liker å uttrykke nye ideer   | -2 | -1 | 0 | 1 | 2 |

## Del 4: Vurdering av egne forslag til middag og reise

Se tilbake på de forslagene du kom med når det gjelder reise og middag. Svar på spørsmålene under ved å krysse av på det alternativet som best stemmer overens med din oppfatning:

|  |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|
| Hvor attraktivt synes du hvert forslag er? (1 = svært lite attraktivt, 7= svært attraktivt)  |   |   |   |   |   |   |   |
| Reisen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Middagen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Hvor sannsynlig er det at du ville stemme for å realisere hvert av forslagene dine hvis det var deg og 3 av dine medstudenter som skulle reise sammen/ spise sammen? (1 = svært lite sannsynlig, 7 = svært sannsynlig) |   |   |   |   |   |   |   |
| Reisen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Middagen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Hvor sannsynlig er det at du ville velge å foreta denne reisen eller spise en middag som dette en eller annen gang? (1 = svært lite sannsynlig, 7 = svært sannsynlig)  |   |   |   |   |   |   |   |
| Reisen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Middagen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Hvor moro syntes du det var å komme med forslaget til reise/middag (1= svært kjedelig, 7 = svært morsomt)  |   |   |   |   |   |   |   |
| Reisen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Middagen   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Har du noen gang tidligere gjort en slik reise/spist en slik middag? (1 = aldri, 7 = svært ofte)   |   |   |   |   |   |   |   |
| Reisen   |   |   |   |   |   |   |   |
| Middagen   |   |   |   |   |   |   |   |

Og så, helt til slutt:

Hva tror du dette forskningsprosjektet dreier seg om?.....

Jeg skal trekke ut i alt 2 reisegavekort til en verdi av 1500 kr hver blant de som har bidratt i dette prosjektet. Skriv navn, telefonnr og e-postadresse under hvis du vil være med i trekningen.

Navn..... Tlf.....

E-postadr.....

**Tusen takk for hjelpen**



## **Appendix 5: Descriptive statistics for all variables**

| Item                  | Mean  | Std.dev. | Skew-ness | Kurtosis | N   | Missing |
|-----------------------|-------|----------|-----------|----------|-----|---------|
| Originality1          | 11.28 | 3.60     | .256      | -.303    | 243 | 2       |
| Originality2          | 11.62 | 3.93     | .131      | -.633    | 243 | 2       |
| Originality3          | 10.28 | 4.88     | .336      | -.999    | 243 | 2       |
| Usefulness1           | 15.18 | 2.54     | -.806     | 2.598    | 245 | 0       |
| Usefulness2           | 17.61 | 2.52     | -1.260    | 2.996    | 245 | 0       |
| Usefulness3           | 18.01 | 2.80     | -1.224    | 1.995    | 245 | 0       |
| Aesthetics1           | 18.40 | 2.22     | -1.515    | 4.271    | 245 | 0       |
| Aesthetics2           | 18.03 | 2.68     | -1.872    | 5.801    | 245 | 0       |
| Categories            | 2.58  | 1.08     | .204      | -.557    | 232 | 13      |
| Unique                | 9.13  | 5.39     | .940      | 1.090    | 232 | 13      |
| BU thinking           | 11.52 | 5.22     | .103      | -1.201   | 233 | 12      |
| TD thinking           | 11.41 | 4.97     | .141      | -.967    | 233 | 12      |
| Knowledge1            | 4.49  | 1.27     | -.224     | -.061    | 245 | 0       |
| Knowledge2            | 4.42  | 1.33     | -.172     | -.013    | 243 | 2       |
| Knowledge3            | 4.52  | 1.22     | -.217     | .333     | 242 | 3       |
| Knowledge4            | 1.95  | 1.24     | 1.516     | 1.828    | 244 | 1       |
| Knowledge5            | 4.53  | 1.17     | -.218     | .460     | 243 | 2       |
| Knowledge6            | 1.98  | 1.29     | 1.594     | 2.260    | 243 | 2       |
| Knowledge 7           | 4.13  | 1.20     | -.096     | -.578    | 245 | 0       |
| Knowledge 8           | 4.84  | 1.37     | -.968     | .065     | 240 | 0       |
| Motivation1           | 3.90  | 1.72     | -.155     | -.688    | 228 | 17      |
| Motivation 2          | 4.30  | 1.85     | -.358     | -.939    | 235 | 10      |
| Motivation 3          | 4.87  | 1.73     | -.716     | -.388    | 241 | 4       |
| Motivation 4          | 4.47  | 1.81     | -.464     | -.733    | 233 | 12      |
| Motivation 5          | 4.55  | 1.73     | -.494     | -.391    | 234 | 11      |
| Motivation 6          | 5.68  | 1.49     | -1.307    | 1.407    | 240 | 5       |
| Motivation 7          | 4.24  | 1.58     | -.363     | -.093    | 228 | 17      |
| Motivation 8          | 5.62  | 1.48     | -1.101    | .833     | 236 | 9       |
| Efficacy 1            | 5.79  | 1.48     | -1.155    | .477     | 243 | 2       |
| Efficacy2             | 5.83  | 1.33     | -.938     | -.197    | 244 | 1       |
| Efficacy3             | 6.14  | 1.25     | -1.564    | 2.108    | 235 | 10      |
| Efficacy 4            | 5.97  | 1.46     | -1.433    | 1.280    | 243 | 2       |
| Efficacy 5            | 6.22  | 1.21     | -1.802    | 3.215    | 245 | 0       |
| Efficacy 6            | 5.65  | 1.44     | -1.124    | .818     | 242 | 3       |
| Efficacy 7            | 6.19  | 1.17     | -1.564    | 2.068    | 244 | 1       |
| Efficacy 8            | 5.88  | 1.46     | -1.247    | .530     | 244 | 1       |
| Innovativeness1       | 3.57  | 0.90     | -.335     | -.336    | 242 | 3       |
| Innovativeness2       | 3.48  | 1.01     | -.198     | -.740    | 243 | 2       |
| Innovativeness3       | 3.89  | 0.92     | -.631     | .106     | 243 | 2       |
| Innovativeness 4      | 3.88  | .83      | -.393     | -.150    | 243 | 2       |
| Innovativeness 5      | 3.63  | .88      | -.443     | .048     | 241 | 4       |
| Innovativeness 6      | 3.48  | .85      | -.403     | .348     | 236 | 9       |
| Innovativeness 7      | 3.92  | .95      | -.678     | .023     | 239 | 6       |
| Innovativeness 8      | 4.24  | .88      | -1.1097   | 1.067    | 241 | 4       |
| Innovativeness 9      | 3.19  | .91      | .082      | -.142    | 242 | 3       |
| Innovativeness 10     | 2.86  | 1.14     | -.019     | -.785    | 242 | 3       |
| Innovativeness 11     | 2.86  | 1.03     | .004      | -.541    | 239 | 6       |
| Solution evaluation 1 | 5.04  | 1.44     | -.298     | -.602    | 243 | 2       |
| Solution evaluation 2 | 5.49  | 1.53     | -.989     | .446     | 241 | 4       |
| Solution evaluation 3 | 6.16  | 6.16     | -1.765    | 2.866    | 240 | 5       |

## **Appendix 6: Categories of solutions**

| Meal                             | Number of suggestions | Meal          | Number of suggestions |
|----------------------------------|-----------------------|---------------|-----------------------|
| Canned food prepared on bon-fire | 1                     | Baked potatoe | 2                     |
| Chili con carne                  | 1                     | Fondue        | 2                     |
| Moose                            | 1                     | Schrimps      | 2                     |
| Fish caserole                    | 1                     | Soup          | 2                     |
| Fish soup                        | 1                     | Vegetarian    | 3                     |
| Hamburger                        | 1                     | Meat          | 3                     |
| Indian food                      | 1                     | Hot Dogs      | 3                     |
| Tenderloin                       | 1                     | Trout         | 3                     |
| Cookies                          | 1                     | Pork          | 4                     |
| Chops                            | 1                     | BBQ           | 5                     |
| Mousaka                          | 1                     | Salmon        | 6                     |
| Paella                           | 1                     | Fish          | 7                     |
| Quiche                           | 1                     | Tapas         | 8                     |
| Pasta salad                      | 1                     | Stew          | 9                     |
| Rack of lamb                     | 1                     | Beef          | 11                    |
| Pita                             | 1                     | Pizza         | 12                    |
| Rachlette                        | 1                     | Lasagne       | 14                    |
| "Raspeballer"                    | 1                     | Wok           | 18                    |
| "Rype"                           | 1                     | Pasta         | 21                    |
| sandwich                         | 1                     | Chicken       | 31                    |
| scampi                           | 1                     | Taco          | 45                    |
| Ham and melon                    | 1                     |               |                       |
| Steinbit                         | 1                     |               |                       |
| Fried rice                       | 1                     |               |                       |
| Cod                              | 1                     |               |                       |
| Tuna                             | 1                     |               |                       |



## **Appendix 7: Questionnaire for creative product assessment**

## Bakgrunn

245 respondenter har svart på oppgaven:

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*På plassen under skal du beskrive et forslag til en middag for deg selv og dine tre medstudenter. Tenk deg at dere skal unne dere en hyggelig kveld med god mat etter å ha jobbet hardt med skolearbeidet. Du skal lage middagen. Dere har ikke spesielt god råd. Du skal foreslå hva du vil servere ved en slik anledning.*

## Instruksjoner

Din oppgave er å lese gjennom alle forslagene og vurdere hvor kreativt hvert enkelt forslag er **relativt sett i forhold til de andre forslagene i bunken**. Her er det dine vurderinger som teller, men ha oppdraget i bakhodet. Når du for eksempel skal vurdere hvor tiltrekkende forslaget er, skal du gi din vurdering med tanke på at de ble bedt om å lage et rimelig forslag de skulle lage selv. Noen få av respondentene har kommet med flere enn ett forslag. I de tilfellene skal du bare vurdere det første forslaget.

1. **Les gjennom alle forslagene før du begynner å vurdere dem.** Selve forslaget er skrevet med uthevet skrift.
2. Vurder hvert enkelt forslag i forhold til de andre forslagene og
  - a. plasser dem på skalaen 1-7 for hver av de 10 adjektivpolene som er presentert under hvert forslag.
  - b. Merk av på skalaen hvor mye egeninnsats du mener skal til for å *planlegge* måltidet. Med egeninnsats menes hvor mye de selv må gjøre i forkant av tilberedningen med tanke på å sanke råvarer (plukke bær, fiske fisk, skyte dyr), farte rundt til forskjellige butikker for å skaffe råvarer, lete på internett etter oppskrifter, be venner ta med ting til måltidet osv.
  - c. Merk av på skalaen hvor mye egeninnsats du mener skal til for å *lage* maten. Med egeninnsats menes hvor mye de selv må gjøre for å skape måltidet, for eksempel krever en Grandiosa langt mindre innsats enn et måltid bestående av flere retter der alt må lages fra bunnen av.

### Beskrivelse av forslaget (for eksempel "Taco")

|               |   |   |   |   |   |   |   |                  |
|---------------|---|---|---|---|---|---|---|------------------|
|               | Vurder dette forslaget i forhold til de andre du har lest her. Plasser forslaget på hver av de ti adjektivmotsetningene ved å krysse av på det tallet som best stemmer med din vurdering: |   |   |   |   |   |   |                  |
| Spennende     | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Kjedelig         |
| Frisk         | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Utbrukt          |
| Ny            | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Gammel           |
| Effektiv      | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Ineffektiv       |
| Gjennomførbar | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Ugjennomførbar   |
| Vil fungere   | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Vil ikke fungere |
| Vellaget      | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Slurvete         |
| Ryddig        | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Rotete           |
| Velorganisert | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Uorganisert      |
| Tiltrekkende  | 1   | 2 | 3 | 4 | 5 | 6 | 7 | Uiltrekkende     |

|                                    | Vurdering av hvor mye egeninnsats som kreves |            |      |         |     |           |                    |                |
|------------------------------------|--|------------|------|---------|-----|-----------|--------------------|----------------|
|                                    | Ingenting                                    | Svært lite | Lite | Middels | Mye | Svært mye | Alt må gjøres selv | Kan ikke svare |
| Egeninnsats i <b>planlegging</b>   | 1  | 2          | 3    | 4       | 5   | 6         | 7                  | ?              |
| Egeninnsats i <b>gjennomføring</b> | 1  | 2          | 3    | 4       | 5   | 6         | 7                  | ?              |



## **Appendix 8: Questionnaire for bottom-up thinking assessment**

Under er det presentert beskrivelser av hvordan respondenten tenkte når de kom med et forslag til en reise. I instruksene ble respondentene bedt om å legge vekt på pris (ikke for dyrt), at de skulle ha nye og spennende opplevelser, at de skulle reise sammen med medstudenter på en langweekend.

Du skal hjelpe til med å klassifisere disse tanke beskrivelsene ved å svare på spørsmålene som er listet under hver beskrivelse. Dersom påstanden passer svært godt på beskrivelsen setter du et kryss over tallet 7. Hvis påstanden passer svært dårlig til beskrivelsen krysser du av på tallet 1. Dersom du ut fra beskrivelsen ikke kan gi noe godt svar krysser du av på spørsmålstegnet.

Gjengivelse av tankeprotokollen

|  |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
| Beskrivelsen tyder på at respondenten har lagt vekt på instruksene (pris, nye/spennende opplevelser, sammen med medstudenter på langweekend)   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ? |
| Beskrivelsen tyder på at respondenten har lagt vekt på sin egen tidligere erfaring   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ? |
| Beskrivelsen tyder på at respondenten har lagt vekt på anbefalinger fra andre  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ? |
| Beskrivelsen tyder på at respondenten først kom til å tenke på destinasjonen, så på hva som kunne gjøres der, hvordan komme dit etc.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ? |
| Beskrivelsen tyder på at respondenten først tenkte på hvilke egenskaper en attraktiv destinasjon har (for eksempel billig, lett å komme seg dit, spennende opplevelser), og at valget av sted kom etterpå. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ? |
| Beskrivelsen tyder på at respondenten har lagt stor vekt på sine egne preferanser  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ? |
| Beskrivelsen tyder på at respondenten har lagt stor vekt på preferansene til de som skal være med  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ? |

Noe annet som slår deg ved denne beskrivelsen?.....

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# NHH

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NHH, the Norwegian School of Economics and Business Administration, is one of the leading business schools in Scandinavia. Over 2,700 students are enrolled in our various programmes. We have recently reorganised our programmes so that they follow a 3+2+3 year sequence, leading to the awarding of Bachelor of Science, Master of Science and Ph.D. degrees respectively.

NHH has a long reputation for its high academic level and contributions to the international research community. A large number of our faculty hold a Ph.D. from institutions outside of Norway, in particular top US universities. This creates a diverse and stimulating academic environment.

The Ph.D. student body is made up of around 100 men and women working within different specialisations. The programme encourages close interaction between students and faculty in a social/academic climate where students are regarded as junior colleagues.

The Ph.D. programme offers courses over a wide range of topics within Accounting, Economics, Finance, Management Science and Strategy and Management. The programme aims at giving the graduate a solid training in performing high quality scientific research in these areas, making use of state of the art empirical and theoretical techniques. This prepares the student for employment in national and international policy institutions, within research centres, business enterprises, and for the international academic job market. The entire programme is taught in English and runs over three years, with the first year consisting primarily of course work. The next two years are then devoted to independent research and the writing of a doctoral thesis, under the supervision of an advisor appointed from the NHH faculty.