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The Hidden Influence of Cognitive Processing Style on Consumers' Intention to Adopt Innovative Products

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Abstract

It is a central aim of Product Innovation Management to find the factors that influence consumers' decision to adopt innovations. In this quantitative, empirical thesis, I illuminate a new, irrational side of consumers' intention to adopt product innovations by drawing on Novelty Categorization Theory. I analyse the research question: Does the situational, dichotomous and cognitive factor processing style (global vs. local processing) (i) affect consumers' intention to adopt innovations and does the effect (ii) vary depending on different levels of consumers' personal predisposition to resist innovations? I recruit participants from the crowdsourcing platform Amazon Mechanical Turk (MTurk) and test the effects by means of multivariate, linear regression analysis. With this thesis I contribute to theory by altering the Innovation Decision Model and contribute to practice by uncovering a factor that can be utilized for the invention of new marketing instruments.

Keywords: Product innovation management; innovation resistance; local and global processing; consumer behavior; innovation decision model.

1. Introduction

A large portion of literature in innovation research focusses on how to increase innovation performance, measured by product innovation and financial performance – such as sales from innovative products (Keupp, Palmié, & Gassmann, 2012). While internal factors and a company's innovation strategy certainly have great impact on the invention of new products and financial innovation performance (Laursen & Salter, 2006; Maurer, Bartsch, & Ebers, 2011), many innovations fail to return sales due to low adoption rates (Gourville, 2006). Alexander, Lynch, and Wang (2008) and Jhang, Grant, and Campbell (2012) showed that there is a negative relationship between the degree of newness as well as incongruity of a product and intention to adopt a product. It is the objective of this thesis to contribute to the body of innovation management and marketing literature by identifying a new factor (global vs. local processing style) that can be utilised in the aim to improve adoption rates of innovative products and thereby increase the innovation performance of companies.

The thesis is influenced by two streams of research. One line of research is rooted in Gestalt Psychology and analyses the effect of global and local processing on conceptual abilities and preferences (Förster, 2012). The other line of research focusses on innovation adoption or resistance (Ostlund, 1974; Ram & Sheth, 1989). In the following two paragraphs I will shortly outline the state-of-the art of both research areas.

While the distinction between elemental and holistic processing has been present in philosophy for a long time, the research on global and local processing and Gestalt Psychology was set in motion by a research article from Navon (1977) (Förster, 2012). He discovered a dominance of global processing in contrast to local processing (Navon, 1977). Since then global and local processing has been connected to a number of conceptual abilities and conditions (Förster, 2012). For example, global processing has been shown to fit a focus on similarities (Förster, 2009). Other studies find a connection between processing style and mood (Gasper & Clore, 2002) and processing style and creativity (Zmigrod, Zmigrod, & Hommel, 2015). Recently, Förster, Marguc, and Gillebaart (2010) developed on basis of theoretical arguments and empirical findings in global/local research the Novelty Categorization Theory (NCT). In their theoretical paper they discuss the effect of novel events on processing style and vice versa the effect of processing style on the per-

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ception of novel events. In a central argument they claim that global processing might encourage the acceptance of novel events by broadening mental categories (Förster et al., 2010). In this thesis I draw an NCT and other empirical finding to test the applicability of this assumption on IAIP.

The research on innovation adoption behaviour is influenced by innovation diffusion research which analyses adoption behaviour on an aggregate level (Rogers, 1976). As Ostlund noted in 1974, the study of individual level adoption behaviour provides an additional important insight. Innovation adoption research focusses on one hand on functional attributes of innovations and on the other hand on the development of a construct for measuring individual level innovativeness (Ostlund, 1974; Roehrich, 2004). However, researchers pointed out that the literature on innovation has had a pro-adoption or pro-change bias and aimed to analyse innovations from a resistance perspective (Ram & Sheth, 1989). Similar to innovation adoption literature, the research in innovation resistance literature has identified product related factors (barriers to innovation) i.e. Active Innovation Resistance (AIR) (Ram & Sheth, 1989; Heidenreich & Spieth, 2013) and individual level Passive Innovation Resistance (PIR) characteristics (Heidenreich & Handrich, 2015). One aspect of PIR is Cognitive Passive Resistance (CPR), which is conceptualized to be customers' predisposition to resist innovation (Heidenreich & Kraemer, 2016). This construct unites several personality traits that have a negative influence on IAIP (Oreg, 2003; Heidenreich & Handrich, 2015).

In this thesis I will unite the two research streams to analyse the research questions: (1) Does processing style affect consumers' IAIP and (2) does the effect vary depending on different levels of consumers' predisposition to resist innovations (CPR)? For this quantitative empirical thesis, I collected data from potential consumers via the crowdsourcing platform Amazon Mechanical Turk (MTurk) and Psytookit. In this thesis I outline the research according to the following procedure: First, the theoretical background section gives an overview of the concepts relevant for hypothesis development and interpretation of the results. Secondly, I develope and discusse three hypotheses based on theoretical arguments and empirical findings. Next, I explain the methodology of the research and present results from the main analysis. I continue to explore the interrelation of effects in a Post-Hoc analysis before summarising the results. Last, I discuss the contribution, implications and further research of the empirical findings and highlight limitations of the study followed by a conclusion.

2. Theoretical Background

2.1. Customers' Perspective on Product Innovations

2.1.1. Overview

The customers' perspective on product innovations (product newness) is a "reflective construct" (Garcia & Calantone, 2002, p. 125) i.e. the view of the customer does not define product innovations (Garcia & Calantone, 2002). A (product) innovation is a technological invention that has economic value i.e. that is diffused to and adopted by customers (Garcia & Calantone, 2002). Furthermore, the degree of innovativeness of a product is defined by technological and marketing discontinuities on the macro (world, industry, market) and micro (firm) level[1] (Garcia & Calantone, 2002; Calantone et al., 2006). Instead of integrating the customer's view in the innovativeness concept, it is modeled on top of a pre-defined set of product innovations as product newness. In other words, it analyzes the customers' perspective of products based on a definition of product innovations that stems from technological invention and firms economic activity, instead of defining all products as product innovations that are perceived as "new" or "different" by customers (Garcia & Calantone, 2002).

For the conceptualization of the customers' perspective on product innovations, I adopt the general approach of a reflective construct by Garcia and Calantone (2002) and additionally draw on research by Danneels and Kleinschmidtb (2001), Calantone et al. (2006) as well as Hoeffler (2003). Hoeffler (2003) distinguishes between two stages of customer perception (a) "What is it?" (Hoeffler, 2003, p. 407) and (b) "What of it?" (Hoeffler, 2003, p. 407). The first stage is concerned with the cognitive categorization of an innovation whereby product innovations are incongruent to mental product categories (Hoeffler, 2003). The second stage encompasses product advantage and behavioral change associated with adopting an innovation (Hoeffler, 2003). Furthermore, Hoeffler (2003) shows that product advantage of innovations is perceived as riskier than that of common products. These three elements of the second stage, product advantage, risk/uncertainty and behavioral change, also correspond to the concept of product innovations from a customer's perspective as described by Danneels and Kleinschmidtb (2001). They draw on the work of Rogers (1995) (cited in Danneels & Kleinschmidtb, 2001), Gatignon and Robertson (1991) (cited in Danneels & Kleinschmidtb, 2001) as well as Schmidt and Calantone (1998). Similarly, Calantone et al. (2006) distinguishes between product advantage and customer familiarity. Customer familiarity in turn encompasses risk and behavioral change. Therefore, Danneels and Kleinschmidtb (2001), Hoeffler (2003) and Calantone et al. (2006) agree on the elements of the second stage - relative advantage, uncertainty/risk, behavioral change (product newness). Building on the work of these authors, I define the customers' perspective on product innovations as a reflective construct that is composed of two stages, (a) identification - "What is it?" (Hoeffler, 2003, p. 407) - and (b) evaluation - "What of it?" (Hoeffler, 2003, p. 407) -, corresponding to the concepts of incongruence and product newness (including relative advantage, uncertainty/risk, behavioral change). In

[1] Depending on the definition, the micro level may also include the customer's perspective. Garcia and Calantone (2002) and Calantone, Chan, and Cui (2006) however differentiate between product innovativeness and customer familiarity.

the following I will describe, compare and critically evaluate the concepts and elements identified above.

2.1.2. Elements

Incongruence

Innovativeness of a product from customers' perspective can be defined by incongruence (Jhang et al., 2012) which triggers the creation of new psychological knowledge structures (Moreau, Markman, & Lehmann, 2001). This area of research is influenced by categorization theory (Cohen & Basu, 1987). Categorization theory assumes that each object is subsumed under a schema-like representation of a group of similar objects (category) based on shared attributes. Furthermore, each category is linked to associative knowledge (Cohen & Basu, 1987). When confronted with an object the consumer will recognize it as belonging to a certain category of objects and will be able to understand the utility of the object based on the associated knowledge of the existing category (Cohen & Basu, 1987). This process of first identifying the object (What is it?) and secondly making sense of its utility (What of it?) is straightforward for common products (Hoeffler, 2003). An innovative product however does not fit with existing categories (Moreau et al., 2001) or the associated knowledge (Jhang et al., 2012). This lack of fit with existing knowledge structure defines the concept of incongruence (Mandler, 1982 cited in Jhang et al., 2012 p. 248; Jhang et al., 2012). In consequence the customer has to create new cognitive links to associated knowledge (Jhang et al., 2012) or create entire new product categories (Moreau et al., 2001) in order to make sense of the product and understand its utility (Hoeffler, 2003).

The concept of incongruence has relevance for the evaluation of innovative new products due to its effect on positive/negative affect (Meyers-Levy & Tybout, 1989). It has been shown repeatedly that incongruence has an inverted u-shaped relationship to positive affect/evaluation of a product (Jhang et al., 2012). As Mandler (1982) (cited in Noseworthy, Di Muro, & Murray, 2014, p. 1109) argued and Meyers-Levy and Tybout (1989) in combination with Noseworthy et al. (2014) proved, low levels of incongruence result in low physiological arousal and are evaluated as mildly positive. A medium level of incongruence increases physiological arousal and results in high positive evaluation. This is due to the consumers ability to resolve medium high incongruence based on his/her ability to draw on the associated knowledge of existing categories (Jhang et al., 2012). High levels of incongruence however result in high physiological arousal and in negative affect due to consumers inability to resolve the incongruence (Mandler, 1982 cited in Noseworthy et al., 2014, p. 1109, Meyers-Levy & Tybout, 1989). The inverted u-shaped relationship is moderated by several factor. Noseworthy et al. (2014) find that physiological arousal prior to the evaluation of the product (state arousal) affects the evaluation. Maoz and Tybout (2002) show that the level of involvement influences the effect of incongruence on product evaluation. Campbell and Goodstein (2001) find that the positive effect of medium high incongruence depends on the level of perceived risk. While under low risk condition product evaluation follows the inverted u-shaped relationship, under high risk conditions consumers prefer less incongruent products to medium incongruent products. Perceived risk, as already mention in the overview, is an element of product newness. Which I will describe in the following section.

Product Newness

Product Newness is a concept that combines Relative Advantage, Perceived Risk and Behavioral Change (Danneels & Kleinschmidtb, 2001; Hoeffler, 2003; Calantone et al., 2006). In the following I will discuss each element.

The element Relative Advantage is attributed to Rogers and Shoemaker (1971) (cited in Ostlund, 1974, p. 24) and originates from innovation diffusion research. It describes the value gain of a new product compared to preceding products (Ostlund, 1974). Similarly, Product Advantage is defined by Calantone et al. (2006) as a product superior in quality, benefit and function compared to existing products. While these two terms are a positive formulation of the concept and originates from innovation adoption related literature, the term Value Barrier originates from research focused on innovation resistance (Ram & Sheth, 1989). Regardless, all three terms basically describe the same evaluation criteria: Does the innovation have superior value to the customer or not? Small differences in the concepts can be found in the definition of the added value or advantage. While some researchers focus on benefit gain of a product (Hoeffler, 2003), other define the advantage (or value) as quality (Cooper, 1979) or performance (Ram & Sheth, 1989). Calantone et al. (2006) definition is the most comprehensive by encompassing quality, benefit and function. Evaluating the relative value of an innovation can be difficult. As Hoeffler (2003) found, relative advantage of innovations is associated with uncertainty and risk.

Perceived uncertainty or risk was first analyzed by Ostlund (1974) as an additional factor to explain individual's innovation adoption behavior. While many types of risk can be associated with innovations (Ram & Sheth, 1989), the risk identified as product newness by Danneels and Kleinschmidtb (2001), Hoeffler (2003) and Calantone et al. (2006) refers to product performance risk i.e. the fear that relative advantage might not be delivered by the innovation. Similarly, Ram and Sheth (1989) define functional risk in the context of innovation resistance. Hoeffler (2003) showed that uncertainty about the benefit of a product is indeed higher for products that were previously rated higher on their degree of newness by customers. It is important to note, that the evaluation of risk in this context is subjective (Mitchell, 1999) (i.e. perceived uncertainty/risk). As consequence, it can be influenced by boundary conditions. Processing style (global vs. local), which will be discussed in more detail below, has been shown to influence the level of perceived risk (Lermer, Streicher, Sachs, Raue, & Frey, 2016) and risk taking behavior (Lermer, Streicher, Sachs, Raue, &

Frey, 2015).

Behavioral Change refers to the perceived extend of change in customers' product usage habits (Hoeffler, 2003) and is, from an innovation resistance perspective, also known as Usage Barrier (Ram & Sheth, 1989; Talke & Heidenreich, 2014). It is as such closely related to Rogers and Shoemaker (1971) (cited in Ostlund, 1974, p. 24) compatibility measure, which encompasses the consistency of the innovation with past experiences (Ostlund, 1974).

The individual elements of product newness all originate from research in innovation diffusion (Rogers & Shoemaker, 1971 cited in Ostlund, 1974, p. 24), individual innovation adoption behavior (Ostlund, 1974) or resistance to innovation (Ram & Sheth, 1989). However, they were not constructed to predict the degree of innovation from customers' perspective. It is important to note that there is a distinction between a) accessing which factor makes innovations successful or unsuccessful and b) accessing which factor characterize newness from a customer's perspective. While Danneels and Kleinschmidtb (2001), Hoeffler (2003) and Calantone et al. (2006) all agree that this assortment of elements is relevant for the customers' perspective on the degree of innovation, none provides an empirical test that proves the validity of the construct for a newness rating from customers' perspective. As Danneels and Kleinschmidtb (2001) already noted the view of the customer is hardly ever considered in innovation research or restricted to success factors and barriers. Garcia and Calantone (2002) conclude in their review of innovativeness constructs:

> "We have modeled newness to the customer as a reflective construct to product innovativeness. A product's innovativeness classification is never dependent upon the viewpoint of the customer. This is an error of reversal of causal inferences. The goal of identifying innovation typologies is to build an understanding of how the firm must approach the development process of new products." (Garcia & Calantone, 2002, p. 125)

2.2. Cognitive Passive Resistance

Cognitive Passive Resistance (CPR) is a person's "predisposition to resist innovation" (Heidenreich & Kraemer, 2016, p. 278). It is a construct that combines different personality traits (Oreg, 2003; Heidenreich & Handrich, 2015), which create unwillingness and emotional unrest (Oreg, 2003) in people when confronted with situations that disrupt their familiar ease. This thesis follows Heidenreich and Handrich (2015) and Heidenreich and Kraemer (2016) concept of CPR. The earliest theoretical concept of CPR can be attributed to Sheth (1981) (cited in Heidenreich and Handrich (2015), p. 880). Heidenreich's and Handrich's product innovation related concept is heavily influenced by the work of Oreg (2003), who identified individual personality traits connected to resistance to change in a broader context in psychology research.

CPR belongs to the superordinate construct PIR (Heidenreich & Spieth, 2013, Heidenreich & Handrich, 2015) which encompasses resistance to change that is not based on rational evaluation of a product (Ram & Sheth, 1989, Heidenreich & Handrich, 2015) but on a subconscious reaction to change (Heidenreich & Kraemer, 2016). AIR represents two sets of innovation barriers. The first is psychological barriers the second functional barriers (Talke & Heidenreich, 2014). Within the superordinate construct PIR, CPR needs to be differentiated from Situational Passive Resistance (SPR), which roots in status-quo-bias and describes a person's inclination to stick to a status quo in a decision regardless of increased advantage or product value (Heidenreich & Handrich, 2015).

The individual personality traits of Heidenreich and Handrich (2015) CPR construct are: (1) Routine seeking, (2) cognitive rigidity, (3) emotional reaction to imposed change and (4) short-term focus. Personality trait (1) represents the element of control. People who rate high on routine seeking fear to lose control over a situation due to change (Oreg, 2003). Cognitive rigidity (2) captures a tendency towards dogmatism and closed-mindedness and (3) entails negative affect i.e. stress as response to change (Judge, Thoresen, Pucik, & Welbourne, 1999; Oreg, 2003). People with high short-term focus (4) tend to disregard long-term benefits if there are short-term inconveniences (Kanter, 1985 cited in Oreg, 2003, p. 681; Heidenreich & Handrich, 2015).

While Heidenreich and Handrich (2015) construct is based on the same personality traits as Oreg (2003) construct, they differ in their focus of change. Oreg posed questions to participants that test general live situations; Heidenreich and Handrich (2015) construct poses questions specific for change associated with technological products. An additional construct is personal level inertia, as applied by Mani and Chouk (2018). It mixes CPR with SPR and is composed of questions that, like Oreg (2003), are more generic.

2.3. Intention to Adopt Innovative Products

Intention is the link between attitude, subjective norm and behaviour (Fishbein & Ajzen, 1975 cited in Ryan, 1982, p. 265). This interrelation is known as the Theory or Reasoned Action (Fishbein & Ajzen, 1975 cited in Taylor & Todd, 1995, p. 137). And was later extended to the Theory of Planned Behaviour (Ajzen, 1991) by adding the element of Perceived Behavioural Control as an antecedent to intention. Attitude in turn is influenced by the affective, behavioural, and cognitive responses to a stimulus (Breckler, 1984). Intention as an antecedent to behaviour is moderated by action control (Kuhl, 1981; Bagozzi, Baumgartner, & Yi, 1992). The interrelation is depicted in Figure 1. Action control is a continuum that at one end has state-oriented people and at the other end action-oriented people. While the first describes people, who face "inertia to act" (Bagozzi et al., 1992, p. 507) the other applies to people who are ready to implement their intention (Bagozzi et al., 1992). Intention does therefore not always translate into action (Taylor & Todd, 1995).

Applied to business research this implies that IAIP represents the outcome of a decision based on formed attitudes about the product innovation (Talke & Heidenreich, 2014). But while intention has strong influence on purchasing behaviour it should not be confused with the actual action (Bagozzi et al., 1992). The whole process leading towards the intention to adopt and actual purchase of an innovative product is conceptualized in the Innovation Decision Model (Talke & Heidenreich, 2014) which will be shortly outlined in the following paragraph.

The Innovation Decision Model (IDM) describes the process by which consumers make their adoption decision (Gatignon & Robertson, 1991; Nabih, Bloem, & Poiesz, 1997). As Figure 2 depicts, IDM has five stages: Knowledge, persuasion, decision, implementation and confirmation (Talke & Heidenreich, 2014). This process is accompanied by a diverse set of adopter-specific factors, situation-specific factors and innovation-specific factors. In the knowledge stage consumers become aware of the product. The evaluation of the product and the formation of attitudes and the collection of information follows in the second stage (persuasion). This is followed by the decision stage that results in an intention. In the implementation stage intention is put into action. In the final confirmation stage, the decision to purchase the product or not is re-evaluated (Talke & Heidenreich, 2014). The Decision Process can be viewed through the lens of the innovation adoption or innovation resistance literature (Talke & Heidenreich, 2014). Talke and Heidenreich (2014) distinguishes between passive adoption and rejection and active adoption and rejection. While passive adoption or rejection occurs in the Knowledge stage - and therefore previous to the actual evaluation of the product and the formation of attitudes towards the product - active adoption or rejection represents the actual IAIP as discussed in the previous section.

2.4. Global vs. Local Processing Style

The processing styles global vs. local are two different perceptual scopes (Förster, 2012). Global processing represents abstract thinking i.e. concentrating on the overall gestalt of things rather than the details (Navon, 1977). Its counterpart local processing on contrary facilitates detail-oriented perception (Navon, 1977). It has been shown that processing style affects conceptual scope, e.g. the ability to find similarities (Förster, 2009) or to solve incongruences (Proverbio, Minniti, & Zani, 1998). Processing style also affects people's decisions, e.g. risk-taking behaviour (Lermer et al., 2015) and preferences (Trope & Liberman, 2003). Vice versa different tasks, such as imagining future events or novel events, have been shown to induce a global processing style/abstract construal level (Trope & Liberman, 2003; Förster et al., 2010). While processing style affects people's performance in certain tasks (Förster, 2012) and influences their decisions (Trope & Liberman, 2003), they are entirely unaware of the processing style they are in (Förster, 2012). Furthermore, Novelty Categorization Theory (NCT) as developed by Förster et al. (2010) argues that global processing affects people's acceptance of novel events by triggering a broader categorization of stimuli thereby reducing the perceived level of newness.

While research about the global/local processing style has drawn much attention since Navon (1977), the concept still lacks a common definition (Burgoon, Henderson, & Markman, 2013). This results in inconsistencies in research. First, the term global and local processing style is often used interchangeably with other terminology e.g. abstract und concrete thinking, holistic and elementary (Förster, 2012; Burgoon et al., 2013). Burgoon et al. (2013) assume they represent the same perceptual style. Furthermore, methods for manipulating abstract thinking and global thinking are sometimes used interchangeably in research (e.g. Agerström, Gunnarsson, & Stening, 2017; Proverbio et al., 1998). But processing style i.e. global vs. local origins in Gestalt Psychology (Navon, 1977) whereas abstract and concrete thinking is more often used in the context of Construal Level Theory (Trope & Liberman, 2003). Secondly, abstraction implies a continuum (Trope & Liberman, 2003; Burgoon et al., 2013), i.e. there are different levels of abstraction, whereas the distinction global and local processing implies a dichotomy (Förster, 2012). Yet researchers often use measures for global/local processing that are continuous or discrete (Gasper & Clore, 2002; Fredrickson & Branigan, 2005). Proverbio et al. (1998) showed with Event-Related-Brain Potentials (ERPs) data that different brain areas are active during global processing style than during local processing style, supporting the dichotomy assumption. Based on Förster (2012) and Proverbio et al. (1998), I will define global/local processing style as a dichotomy rather than a continuum.

3. Hypotheses

3.1. Hypothesis 1: The Effect of Global Processing on IAIP

A positive effect of global processing on the IAIP is supported by the following line of argument that is adapted from NCT (Förster et al., 2010): Global Processing can change people's ability to perform certain tasks – the perceptual scope affects the conceptual scope (Förster, 2012). This is also true for people's (general averaged) ability to understand incongruences (Proverbio et al., 1998)[2]. A better ability to understand incongruence leads to positive affect (Meyers-Levy & Tybout, 1989; Noseworthy et al. (2014)[3]. A positive affective response leads to positive attitude (Breckler, 1984) and in turn to a higher IAIP (Talke & Heidenreich, 2014).

[2]This does not mean a decrease of perceived incongruence (mediation).

[3]The following argument for the positive effect of global processing on intention to adopt innovations is made under the presumption, that an innovative product will be rated on a medium to high level of incongruence. It therefore does not argue for an increasing effect for rising levels of incongruence (interaction) but discusses the general positive effect for medium- and high-level ratings of these elements.

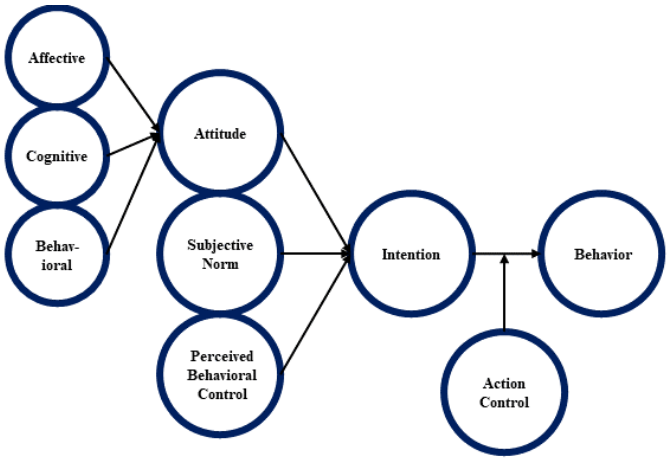

Figure 1: The Interrelation of Intention. Own delineation.

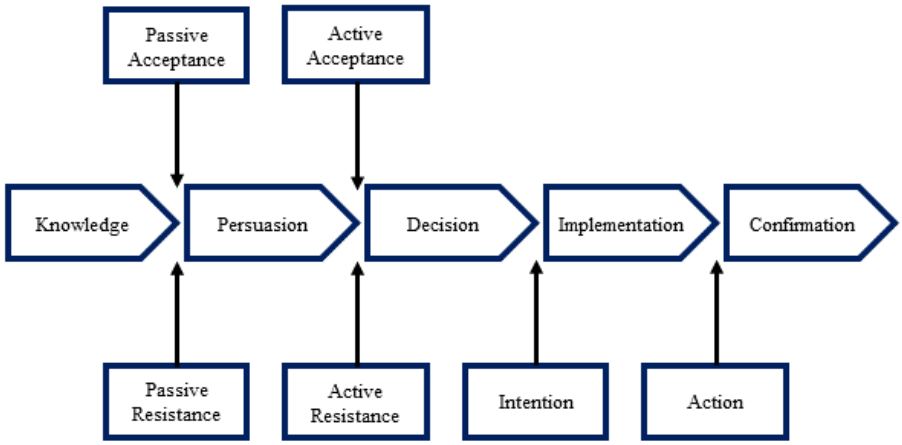

Figure 2: Simplified Innovation Decision Model. In dependence on Talke and Heidenreich (2014, p. 901).

This chain of argument can be supported by multiple empirical studies. First, Proverbio et al. (1998) showed that people under in global processing were as fast to solve incongruent items as they were at solving congruent items. On the other hand, under local processing people were faster to solve congruent than incongruent items. For incongruent as well as congruent items global processing was faster than local processing. Secondly, as Noseworthy et al. (2014) proved medium and high levels of incongruence lead to increased or high levels of physiological arousal. Under medium levels of incongruence people's ability to make sense of the incongruence leads to positive affect; under high incongruence it leads to negative affect due to people's inability to solve the incongruence. If global processing improves people's ability to understand incongruence positive affect should result for products with both medium levels of incongruence as well as high levels of incongruence. Thirdly, the interrelation between positive affect and attitude (Breckler, 1984) as well as positive attitude and intention (Ajzen, 1991) has been demonstrated. Additionally, the positive effect of future vs. past framing on the ability to solve highly incongruent products has been shown by Jhang et al. (2012) in study three. As construal level research found, imagining future events induces abstract thinking (Trope & Liberman, 2003). The theoretical similarity between abstraction and global processing style (Burgoon et al., 2013) gives rise to the presumption that the results can be transferred to the effect of global processing on IAIP.

Contrary to the line of argument outlined above, some theoretical consideration give rise to the presumption that global processing has no effect or an adverse effect on the intention to adopt innovative products. The argument draws on the similarity between global processing and the construal level abstract thinking (Burgoon et al., 2013). According to the affective-dependent time-discounting hypothesis, the effect of affective vs. cognitive responses on preferences diminishes over time i.e. with higher level construal (abstract thinking). This means that for low construal levels (concrete thinking) affective responses dominate preferences whereas for higher level construal (abstract thinking) cognitive responses dominate preferences (Metcalfe & Mischel, 1999; Trope & Liberman, 2000). If global processing and abstract

thinking as well as concrete thinking and local processing is regarded as the same concept, this would imply that under global processing affective responses have less influence on preferences than under local processing. The pro-argument of this section assumes that for incongruent products positive affect mediates the relationship between global processing and attitude. Consequently, the contra-argument would be that global processing does increase positive affect but at the same time the effect of positive affect on attitude and intention is diminished by global processing. Contradicting this argument are the empirical findings of Trope and Liberman (2000). They find in study 5 of their paper that the construal level moderation of affectual responses on preferences is reversed by the relative wight given to affective elements in the presentation of the stimuli. In other words, higher construal level (abstract thinking) does not in general result in a weaker effect for affective responses on preferences (Trope & Liberman, 2000).

In sum the present research shows a stronger support for the pro-hypothesis and weaker support for the contra-hypothesis. Consequently, a positive relationship between global processing style and IAIP is hypothesised.

> Hypothesis 1: Global Processing has a positive effect on the intention to adopt innovative products.

3.2. Hypothesis 2: The Negative Effect of CPR on IAIP

CPR is a combination of personality trades that are hypothesised to lead to low acceptance of change in general or particularly for IAIP. As outlined in the theoretical background section, it is composed of the personality traits (1) routine seeking, (2) cognitive rigidity, (3) emotional reaction to imposed change and (4) short-term focus identified by Oreg (2003). As he outlines in his paper, cognitive rigidity implies that people are "less willing and able to adjust to new situations" (Oreg, 2003, p. 681). Routine seeking makes a distinction between people who are better at performing repetitive tasks and people who are better at performing novel tasks (Kirton, 1989 cited in Oreg, 2003, p. 681; Oreg, 2003) as well as stress as consequence to novel situations (Oreg, 2003). Emotional reactions represent low resilience that leads to higher stress level and loss of control (Conner, 1992 cited in Oreg, 2003, p. 680; Oreg, 2003). Short-term focus implies a disregard of long-term benefits due to emotional short-term reactions (adjustment) (Oreg, 2003). Basically, all these explanations are based on two lines of argument: (1) people have a negative affective response to change and (2) they are less able to perform the necessary cognitive adjustment that change requires. The negative relationship between CPR and IAIP is empirically supported by Heidenreich and Handrich (2015) as well as Heidenreich and Kraemer (2016).

Despite the strong theoretical and empirical support for the negative relationship between CPR and IAIP, one argument points against the hypothesis. CPR as the intrinsic disposition to resist innovation is basically a counter-draft to the concept of innate innovativeness. Like innate innovativeness, CPR can be questioned on basis of the generality/specificity issue (Goldsmith, Freiden, & Eastman, 1995). Empirical findings have shown mixed results for innate innovativeness at a general level and support the view that innovativeness needs to be defined on product category level (Roehrich, 2004). Likewise, the effect of CPR on IAIP can be questioned due to its claim for universal applicability.

Overall, theory and empirical findings support the hypothesis that CPR has a negative effect on IAIP.

> Hypothesis 2: Cognitive Passive Resistance has a negative effect on intention to adopt innovative products.

3.3. Hypothesis 3: The Moderating Effect of CPR

The arguments for a positive moderating effect of CPR, and against a positive moderating effect of CPR on the relationship between global processing and IAIP are based on the distinction between CPR as problem rooted in cognitive ability and CPR as predominately affective problem (see hypothesis 2). While I hypothesis that CPR as an ability problem would result in a positive moderating effect, CPR as a predominately affective issue would show a no or a negative moderating effect.

The line of argument supporting a positive moderation effect is rooted in the assumption that people with high CPR have a lower cognitive ability in coping with change and innovations. In fact, Lee and Webb (2005) showed that people differ in their ability of categorical learning. The ability to categorize and learn new categories is relevant for understanding incongruent stimuli (Moreau et al., 2001), which - by definition - don't fit existing categories (Mandler, 1982 cited in Jhang et al., 2012 p. 248). Consequently, people should differ in their ability to solve incongruent stimuli and people with a lower ability would develop personality traits, that indicate a resistance to change an innovation (CPR) (Uhes & Shaver, 1970; Shaffer & Hendrick, 1974). Due to their lower ability to solve incongruences, people with high CPR would have a higher physiological arousal level for the same level of incongruence than people with low CPR (Gellatly & Meyer, 1992). Therefore, the positive affect resulting from understanding the incongruence should be greater for high levels of CPR than for low levels of CPR. In line with the causal chain outlined in hypothesis 1 higher positive affect should lead to a higher positive attitude and in turn to a higher IAIP (Talke & Heidenreich, 2014).

In contrast, the line of argument for a negative moderating effect of CPR on the relationship between global processing and IAIP is based on the assumption that CPR is a predominately affective problem i.e. people react with stress and high negative affect to change and innovation. Research in Emotional Memory Theory suggests that such a reaction to an exposure of an (innovative) stimuli might be an automatic reaction based on experience with similar emotionally arousing situations in the past (Collins & Allard Lisa M., 2007). Furthermore, research finds that emotional memory

affects the formation of personality traits (Sutin & Robins, 2005). Consequently, a learned affective response to change would result in the formation of personality traits that are associated with resistance to change (CPR) and evoke the same emotion whenever the person is confronted with a similar situation (innovation). Such an uncontrolled negative affective response would collide with the positive affect of hypothesis 1 and diminish its effect on positive attitude formation. The negative moderating effect of CPR would either neutralize the positive effect on positive attitude or result in negative attitude. This would lead to a lower acceptance of IAIP (Talke & Heidenreich, 2014).

Both lines of argument are supported by research findings, therefore it is also possible that a combination of ability and learned affect is consequential for the moderating effect of CPR. In such a case, due to conflicting effects, the overall effect of CPR on the relationship between global processing and IAIP might be neutralized (no effect). However, in this thesis I will hypothesis a positive moderating effect based on individual differences in people's ability to learn new categories.

> Hypothesis 3: Cognitive Passive Resistance has a positive moderating effect on the relationship between global processing and IAIP.

4. Methodology, Analysis and Results

4.1. Methodology

4.1.1. Measurements

The dependent variable IAIP is based on Heidenreich and Kraemer (2016) study. The variable was calculated using the average of four items. Each item posed the question "How likely do you feel it is that you would purchase this product?" (Heidenreich & Kraemer, 2016, p. 285). The items were measured on four different 7-point scales: very unlikely/very likely, highly improbable/highly probable, impossible/possible, unimaginable/ imaginable.

The independent variable processing style (global/local) was tested using 24 global-local items based on Kimchi and Palmer (1982) and four additional control items. Kimchi-Palmer Figures test a participant's processing style by asking them to choose one of two composite comparison figures by comparing them to a composite target figure. Each composite comparison figure does either have a local similarity or a global similarity with the composite target figure (Kimchi & Palmer, 1982). For example, Figure 3 shows a composite target figure of a triangle composed of three small circles. The composite comparison figure A is similar to the composite target figure on a local level because it is composed of small circles as well. Figure A however has no global similarity with the composite target figure because the small circles build a large square not a triangle. Vice versa composite comparison figure B has a global similarity with the composite target figure because both depict a large composite triangle but no local similarity because one is composed of small circles and the other of small squares. Next to the 24 global-local items, four control items were created to test the attention of participants. These four items contained either a local or a global composite comparison figure and one composite comparison figure that had no similarity with the composite target figure (Figure 4). All 28 items that were used in the survey can be found in Appendix 1 and Appendix 2. Each participant was shown all 28 items (in randomized order) and had to choose between A or B. The comprehension of the global-local task was tested with an additional question using the item "Were the instructions given in task 1 understandable?" with the answer options "yes" and "no". In the final sample the percentage of participant's who selected "yes" regarding their comprehension of the global-local task was 99.3%.

The variable GLOBAL was a binary variable that was equal to one if the participant chose 12 or more composite comparison figures with a global similarity out of 24 global-local items and equal to zero if the participant chose 11 or less global composite comparison figures.

The clear binary segregation between global and local processing style instead of a discrete variable that counts the number of global choices (Gasper & Clore, 2002) can be justified by the theoretical definition of global and local processing as a dichotomous cognitive condition in the context of Novelty Categorization Theory (Förster et al., 2010; Förster, 2012). This view is supported by the distribution of global choices in the survey. The distribution (Figure 5) shows high frequencies on the edges and low frequencies around the mean. Concerns regarding the dichotomization of continuous or discrete variables are based on the assumption that the distribution is approximately normal (MacCallum, Zhang, Preacher, & Rucker, 2002). This does not apply to the distribution resulting from the global-local test. Consequently, the variable was dichotomized.

The moderating variable CPR was taken from Heidenreich and Spieth (2013) original research on Innovation Resistance as applied in Heidenreich and Kraemer (2016). The questions were measured on a 7-point scale (completely agree/completely disagree). The questions posed were: "I generally prefer to use technological products with which I am familiar over starting to use new technological products" (Heidenreich & Kraemer, 2016, p. 284); "I find it exciting to try out new technological products"[4] (Heidenreich & Kraemer, 2016, p. 284); "I often feel a bit uncomfortable to try out new technological products, even though it may be beneficial to me" (Heidenreich & Kraemer, 2016, p. 284). The variable CPR was calculated using the average value of the item responses.

Several control variables were used in the analysis. Following Heidenreich and Kraemer (2016) study, the control variables Risk Barrier (RB), Value Barrier (VB), Complexity Barrier (CB), Usage Barrier (UB), Age, Gender, Education and Income were included. Additionally, I added the control variables incongruence (INCONG) (Jhang et al., 2012) and Perceived Health Risk (PHR) (Mani & Chouk, 2018). The in-

[4] Item two was excluded based on Cronbach's Alpha.

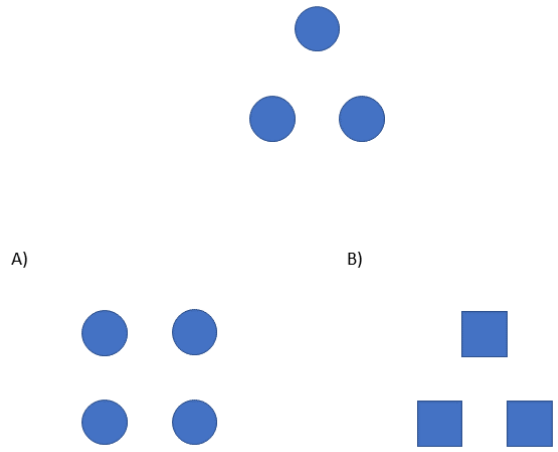

Figure 3: Global-Local Item. Adapted from Kimchi and Palmer (1982, p. 526).

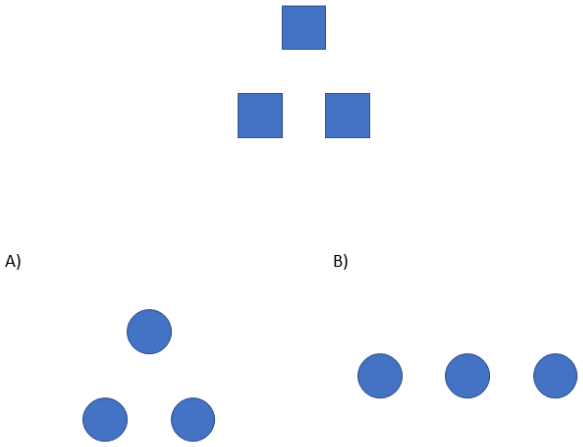

Figure 4: Control Item. Adapted from Kimchi and Palmer (1982, p. 526).

dividual items and scales are listed in the survey transcription in Appendix 3.

The survey collected responses on multiple-item scales to measure the constructs IAIP, CPR INCONG, VB, CB, UB, RB and PHR. To ensure internal consistency Cronbach's Alpha was calculated for each construct. Results are reported in table 1. The alpha-values for IAIP, INCONG, VB, UB, RB and PHR were above the critical value of $\alpha = 0.7$ and were therefore acceptable. The alpha-value for CPR showed a low internal consistency (αCPR $= 0.5701$). Excluding item two raised the alpha-value to αCPR $= 0.6797$. The alpha-value for Complexity Barrier was αCB $= 0.4503$. Excluding item two resulted in an increase of the alpha-value to αCB $= 0.6974$. Consequently, the variables CPR and CB were adjusted to exclude item two.

4.1.2. Research Design

Stimuli

The product to be evaluated by participants was an imaginary Smart Watch that can influence a person's perception of outside temperature by sending cooling or heating signals to the person's nervous system thereby cooling the body down or warming it up as desired (Figure 6). The idea was based on an expired Kickstarter (2017) campaign and was adapted for research purpose.

I chose the product based on the innovativeness criteria incongruence and product newness. Incongruence was tested in the main survey using the item "To me the product is ..." on the two scales. Scale one tested from 1 "atypical" to 7 "typical" and scale two from 1 "unusual" to 7 "usual" (Jhang et al., 2012). In the final sample the average incongruence rating is 3.6724 and 3.4843 showing medium incongruence. Product newness was measured in the main survey using the items "The product is totally new to me" (Heidenreich & Kraemer, 2016, p. 284) and "This technological product is a minor variation of an existing product" (Heidenreich & Kraemer, 2016, p. 284) on a scale ranging

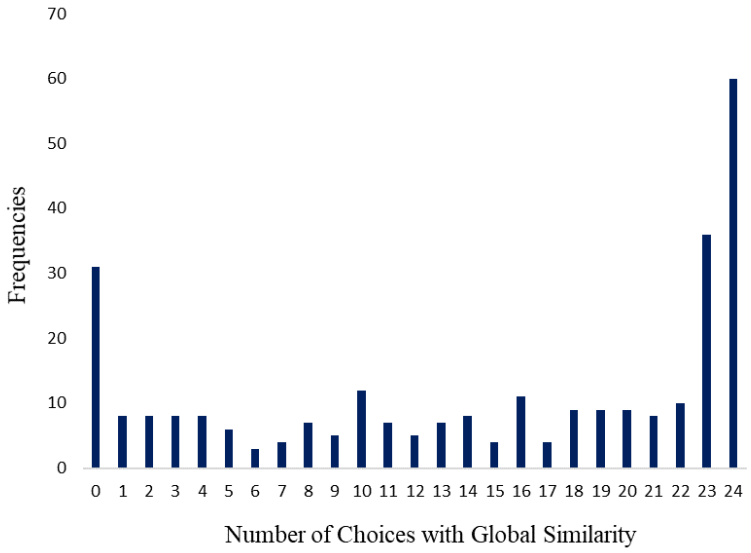

Figure 5: Distribution Resulting from Global-Local-Test. Own delineation.

Table 1: Cronbach's Alpha

CONSTRUCT	CRONBACH'S ALPHA
Intention to Adopt Innovative Product (IAIP)	αIAIP = 0.8449
Cognitive Passive Resistance (CPR)	αCPR = 0.5701
Cognitive Passive Resistance (CPR) (excl. item two)	αCPR = 0.6797
Incongruence (INCONG)	αINC = 0.9077
Value Barrier (VB)	αVB = 0.9171
Complexity Barrier (CB)	αCB = 0.4503
Complexity Barrier (CB) (excl. item two)	αCB = 0.6974
Usage Barrier (UB)	αUB = 0.9194
Risk Barrier (RB)	αRB = 0.7396
Perceived Health Risk (PHR)	αPHR = 0.9322

from 1 "completely disagree" to 7 "completely agree". The scale for the second question was reversed for the analysis to show increasing product newness with growing values. Average scores in the final sample were 5.9756 and 4.2020 respectively, indicating high product newness. The comprehension of the product description was tested with an additional question using the items "The new product's superior benefits were easy to understand from the product description" (Heidenreich & Kraemer, 2016, p. 284) ranging from 1 "strongly agree" to 7 "strongly disagree". In the final sample the average rating of participant's comprehension of the product description was 3.0278.

Data Collection, Research Setting and Procedure

I created an online survey to test the influence of CPR and processing style on IAIP. The survey was conducted using the online survey design tool PsyToolkit (Stoet, 2010; Stoet, 2017) and the crowdsourcing marketplace Amazon Mechanical Turk (MTurk). MTurk workers have been frequently used by social sciences researchers as a participant pool (Paolacci & Chandler, 2014). Participants were recruited through MTurk by publishing Human Intelligence Tasks (HIT) that workers on MTurk selected to do in exchange for $ 0.80. The HIT was described to workers as: "Academic survey, product evaluation, psychological test, duration time approx. 10 min. - please do HIT only once ". Once the worker accepted the HIT, the participant was redirected to PsyToolkit via a link.

The introduction page of the survey showed a reminder to "not take any breaks in between" to ensure that the evaluation of the product and the query of the depended variable happened in direct succession to the global-local test. The survey was designed in the following order: CPR, global-local test (Kimchi-Palmer Figures), Stimuli, IAIP, control variables and comprehension questions[5]. Global-local items were randomized. After completing the survey successfully, the par-

[5]Several additional questions and constructs were included in the survey: Mood (Förster, 2009), Emotion Report Form (Fredrickson & Branigan, 2005), Inertia (Mani & Chouk, 2018), Situational Passive Resistance

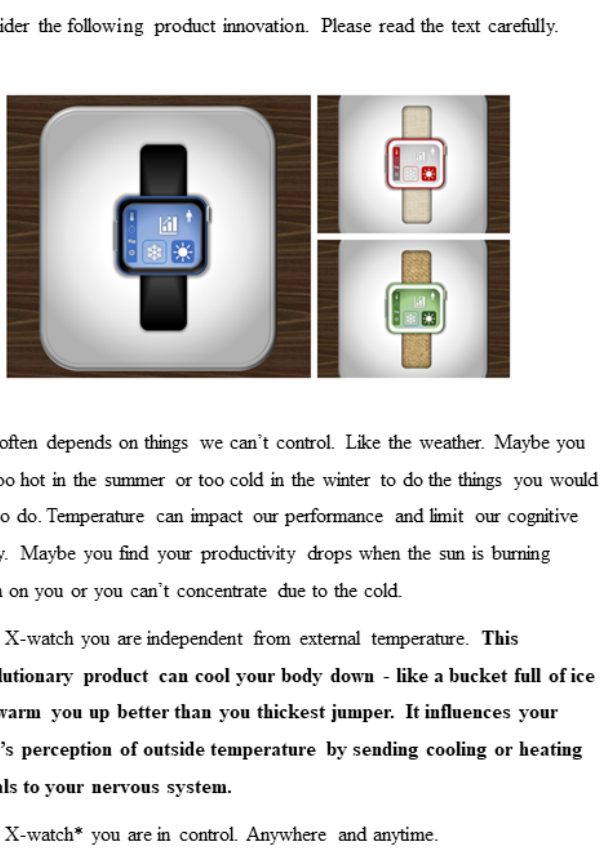

Figure 6: Stimuli

ticipant was given a unique code that had to be reported back to MTurk to complete the HIT and receive the reward. The HITs were published on 5:38 AM Pacific Standard Time and the last HIT was completed on 9:16 PM Pacific Standard Time on the same day.

A major concern with surveys conducted with MTurk workers is data quality (Hauser & Schwarz, 2016). Due to low payment, workers might be motivated to complete HITs as quickly as possible and as a result pay little attention to the questions (Paolacci & Chandler, 2014). In order to increase data quality, participants who did not read the product description carefully and as a result answered the control question (Appendix 3, Q13) regarding the purpose of the product wrong, were redirected to the end of the survey (they received a participation code) and excluded from the final sample. Similarly, Instructional Manipulation Checks (IMC) were used as a method to further increase data quality (Oppenheimer, Meyvis, & Davidenko, 2009).

Instructional Manipulation Checks

To increase data quality, I included IMCs in the survey. Many surveys suffer from poor data quality due to inattentive participants (Oppenheimer et al., 2009). Especially in the context of recruiting participants from MTurk data quality might be a concern (Hauser & Schwarz, 2016). These 'Screeners' (IMC) identify participants who do not read instructions or questions carefully. The effectiveness of IMCs to improve data quality has been tested and confirmed (Oppenheimer et al., 2009; Berinsky, Margolis, & Sances, 2014). Berinsky et al. (2014) recommend using multiple IMCs.

Two concerns can arise from using IMCs. First, using screeners might draw participants attention to the fact that they are being 'tested'. This could lead them to answer the subsequent questions untruthfully in their aim to 'get the answer right'. Berinsky et al. (2014) conducted an experiment and found no evidence to support this concern. Using IMC has no influence on the answers given in the remaining survey questions. Secondly, dropping participants who failed screeners might affect the validity of results, by singling out participants with special demographic characteristics. Berinsky et al. (2014) find, that demographics such as age, gender and education influence the likelihood of passing an IMC. Overall, I decided that the benefits of using IMCs outweigh potential disadvantages causes by demographic bias.

Subsequently, I included two IMCs in the survey. One was preceding the CPR items and one was placed at the end of the survey in between control variable items (Appendix 3, Q3 & Q16). Participants were redirected to the end of the survey

(Heidenreich & Kraemer, 2016) and Technological Anxiety (Mani & Chouk, 2018). These variables are not relevant for the final focus of the thesis and are therefore disregarded in the description of the survey.

as soon as they failed one IMC (but recived a participation code). Participants who failed at least one attention check are not included in the final sample. Next to economic considerations[6] the procedure of dropping participants who fail IMCs is in line with previous research in marketing (Nelson & Simmons, 2009; Meyvis, Goldsmith, & Dhar, 2012; Clarkson, Janiszewski, & Cinelli, 2013).

Sample Characteristics

While MTurk offers the possibility to delimit the workers for the HITs based on different criteria such as quality of their past handling of HITs, no such restrictions were applied to the survey. The survey was accessible to any worker on the MTurk platform. As consequence, original data quality was very poor. The survey was accessed 751 times. Of these 751 participants 264 participants did not complete the survey. Another 200 participants answered at least one IMC or the control question regarding the product description wrong. Due to the large number of participants already excluded by IMCs and the control question, I refrained from additionally dropping participants based on wrongly answered control items (Appendix 2) in the global-local test (67 participants).

The remaining final sample consisted of n=287 participants. 67.6% of participants were male, 32.4% were female and 0% were divers[7]. Regarding education level, 3% had "less than high school" education, 18.5% gave the answer "High school or equivalent", 58.2% "College Degree", 22% "Postgraduate Degree" and 1% "Ph.D. or higher". The average age of respondents in the final sample was 33.1289 years. 75% of respondents were 35 years old or younger. The composition of gender, age and education was therefore not representative for the population.

4.2. Analysis and Results

4.2.1. Descriptive Analysis and Results

Table 2 shows the mean, standard deviation, minimum and maximum of all continuous variables.

Table 3 shows the frequency of all ordinal, categorical and binary variables. Descriptive analysis shows sufficient variation between participants for the variables IAIP, CPR and all control variables. Table 3 shows higher frequencies for global than for local processing style and a higher number of male than female participants and no divers participants. The variable Education shows rising frequencies up to the education level college degree and falling frequencies for education levels higher than college degree.

4.2.2. Correlation Analysis and Results

For all continuous variables, the two-sided Pearson-Correlation coefficients are reported in table 4. The moderating variable CPR shows high significant correlation with the dependent variable IAIP. All control variables, except VB, are also significantly correlated with the dependent variable IAIP.

4.2.3. Regression Analysis and Results

Table 5, Model 1 reports the linear regression results for Hypothesis 1 and Hypothesis 2.

The p-value for GLOBAL indicated no significance. For CPR, the p-value shows a significant effect (β = -0.1240, p < 0,05). Consequently, Hypothesis 1 is not supported, and Hypothesis 2 is supported by linear regression results. Based on these results the processing style has no effect on IAIP and CPR has a negative effect on IAIP. The control variables INCONG (β = 0.1491, p < 0.01), VB (β = -0,0588, p < 0.05), CB (β = -0,3070, p < 0.001), UB (β = -0,2535, p < 0.001), RB (β = -0,1486, p < 0.01) show a significant negative effect on IAIP for rising resistance values, indicating that the higher the perceived barrier the lower the IAIP. The control variable PHR (β = 0,1045, p < 0.05) shows a significant positive effect for rising values. Indicating that the higher the perceived health risk the lower the IATI[8]. The control variables Gender, Age, Education and Income are not significant. An effect of these variables on IAIP can therefore not be supported. Table 5, Model 2 reports regression results for Hypothesis 3. The p-value of the interaction term indicates no significance. Hypothesis 3 is therefore not supported. Based on these regression results for Hypothesis 1 and 3 there is no evidence of an influence of processing style on IAIP. Subsequently, I conducted a Post-Hoc analysis to test possible confounding influences.

4.3. Post-Hoc Analysis

The main analysis found no support for the assumption that global processing affects IAIP. The Post-Hoc analysis however revealed that the control variable Risk Barrier has a central function as a second moderating variable. Furthermore, I was able to prove that processing style does not only influence IAIP as an additional factor but changes the whole composition of factors influencing IAIP.

Risk Barrier tested participants rating on the items "I am not confident that this product will perform as described" (Heidenreich & Kraemer, 2016, p. 284), "I am not certain that this product will work satisfactorily" (Heidenreich & Kraemer, 2016, p. 284) and "I doubt whether the product is reliable in use" (Heidenreich & Kraemer, 2016, p. 284). As discussed in the theoretical background section, risk is an element of perceived innovativeness and it has been shown that processing style affects peoples risk taking behaviour (Lermer et al., 2015). It is therefore possible that, depending on processing style, the same level of risk influences IAIP differently. Furthermore, it is reasonable to assume that people with high CPR differ in risk taking behaviour from people with low CPR. I therefore tested Risk Barrier as a second moderating variable.

[6] Because participants receive payment for taking part in the survey, participants who failed one IMC were redirected and subsequently 'rejected' in MTurk. They therefore received no payment for the task.

[7] Consequently, gender is treated as a binary variable in the analysis.

[8] The variable PHR was tested in the survey on a scale with high values

Table 2: Descriptive Statistics

	N	MIN.	MAX.	MEAN	S.D.
IAIP	287	1,0000	7,0000	4,5897	1,5195
CPR	287	1,0000	7,0000	3,6968	1,5112
INCONG	287	1,0000	7,0000	3,5784	2,0923
VB	287	0,0000	10,0000	4,3519	3,2735
CB	287	1,0000	7,0000	2,9408	1,3076
UB	287	1,0000	7,0000	3,4994	1,8125
RB	287	1,0000	7,0000	4,2462	1,3544
PHR	287	1,0000	7,0000	4,1928	1,6446
Income	287	1,0000	7,0000	4,5575	1,6246
Age	287	20,0000	74,0000	33,1289	9,6690

Table 3: Frequencies of Binary and Categorical Variables

		FREQUENCY	PERCENTAGE
GLOBAL	Local (0)	107	37.2822
	Global (1)	180	62.7178
Gender	Male (0)	194	67.5958
	Female (1)	93	32.4042
	Divers (2)	0	0.0000
Education	Less than high school	1	0.3484
	High school or equivalent	53	18.4669
	College Degree	167	58.1882
	Postgraduate Degree	63	21.9512
	Ph.D. or higher	3	1.0453

Sample: N = 287

Table 4: Correlation

	IAIP	CPR	INCONG	VB	CB	UB	RB	PHR	Income	Age
IAIP	1.0000	-0.2720**	0.3160**	-0.0399	-0.4630**	-0.4040**	-0.1200*	0.2930**	0.3890**	-0.1530**
CPR	-0.2720**	1.0000	-0.5930**	-0.2320**	0.0550	-0.0284	-0.0542	-0.0753	-0.3550**	0.1190*
INCONG	0.3160**	-0.5930**	1.0000	0.3880**	-0.1720**	0.0895	0.1009	0.0855	0.4960**	-0.4210**
VB	-0.0399	-0.2320**	0.3880**	1.0000	-0.0072	0.0999	0.2500**	0.0978	0.1530**	-0.1650**
CB	-0.4630**	0.0550	-0.1720**	-0.0072	1.0000	0.2840**	0.0908	-0.1900**	-0.4090**	0.0815
UB	-0.4040**	-0.0283	0.0895	0.0999	0.2840**	1.0000	-0.1058	-0.4330**	-0.0470	-0.0383
RB	-0.1200*	-0.0542	0.1009	0.2500**	0.0909	-0.1058	1.0000	0.1240*	-0.0488	-0.0509
PHR	0.2930**	-0.0754	0.0855	0.0978	-0.1900**	-0.4330**	0.1240*	1.0000	0.2140**	0.0228
Income	0.3890**	-0.3550**	0.4960**	0.1530**	-0.4090**	-0.0470	-0.0488	0.2140**	1.0000	-0.2000**
Age	-0.1530**	0.1190*	-0.4210**	-0.1650**	0.0815	-0.0383	-0.0509	0.0228	-0.2000**	1.0000

Table 6 shows the results for a three-way interaction between GLOBAL and the moderating variables CPR and RB on the dependent variable IAIP. All main effect and interaction effects are highly significant ($p < 0.001$). The regression coefficient for all main effects is negative, indicating the negative influence of global processing (β = -4.2202), and a negative influence for rising values of CPR (β = -1.0814) and RB (β = -1.0675). The interaction CPRxGLOBAL (β = 1.0548) is positive. This means that with rising CPR, global processing has an increasingly positive effect on IAIP. Analogously, the interaction RBxGLOBAL (β = 0.9870) is positive as well indicating a positive effect of global processing for rising values of RB. The interaction RBxCPR (β = 0.2250) is also positive. The influence of the interaction term RBxCPRxGLOABL (β = -0.2393) is negative.

The overall interrelation between the four variables IAIP, GLOBAL, CPR and RB is depicted in Figures 7-13. They show the influence of GLOBAL and CPR on IAIP based on different levels of RB. The general trend of the graphs give rise to the assumption that local processing could have an antithetical effect for high levels vs low levels of CPR which reverses with

for low perceived health risk and low values for high perceived health risk (Appendix 3, Q21).

Table 5: Regression Model for Hypothesis 1-3

	MODEL 1			MODEL 2		
	β	S. E.	Sig. (p)	β	S. E.	Sig. (p)
(Constant)	5,7326	0,7875	0,0000	5,8977	0,8364	0,0000
GLOBAL	0,1685	0,1442	0,2436	-0,0339	0,3715	0,9274
CPR	-0,1240	0,0580	0,0334	-0,1604	0,0847	0,0591
CPRxGLOBAL				0,0566	0,0958	0,5549
INCONG	0,1491	0,0514	0,0040	0,1493	0,0514	0,0040
VB	-0,0588	0,0236	0,0132	-0,0584	0,0236	0,0139
CB	-0,3070	0,0607	0,0000	-0,3054	0,0608	0,0000
UB	-0,2535	0,0443	0,0000	-0,2546	0,0444	0,0000
RB	-0,1486	0,0536	0,0059	-0,1515	0,0539	0,0053
PHR	0,1045	0,0484	0,0316	0,1038	0,0484	0,0330
Gender	0,2271	0,1532	0,1393	0,2372	0,1543	0,1255
Age	-0,0097	0,0080	0,2287	-0,0103	0,0081	0,2029
Education	0,2016	0,1135	0,0767	0,1998	0,1137	0,0799
Income	0,0702	0,0546	0,1995	0,0673	0,0549	0,2206

Dependent variable: Intention to Adopt Innovative Product (IAIP), N=287

Table 6: Regression Results for Three-Way Interaction.

	β	S. E.	Sig. (p)
(Constant)	9,5614	1,1097	0,0000
GLOBAL	-4,2202	1,1610	0,0003
CPR	-1,0814	0,2074	0,0000
RB	-1,0675	0,1985	0,0000
CPRxGLOBAL	1,0548	0,2760	0,0002
RBxGLOBAL	0,9870	0,2558	0,0001
CPRxRB	0,2250	0,0469	0,0000
CPRxRBxGLOBAL	-0,2393	0,0613	0,0001
INCONG	0,1662	0,0499	0,0010
VB	-0,0450	0,0232	0,0536
CB	-0,2828	0,0588	0,0000
UB	-0,2931	0,0438	0,0000
PHR	0,1430	0,0478	0,0030
Gender	0,2523	0,1490	0,0917
Age	-0,0099	0,0078	0,2050
Education	0,1858	0,1097	0,0914
Income	0,0570	0,0530	0,2831

Dependent variable: Intention to Adopt Innovative Product (IAIP), N=287

increasing levels of RB. It is however important to note that the regression results allow no conclusion on whether the overall effect of global processing vs. local processing is significant for low or high CPR value on any level of RB (Dawson & Richter, 2006). The regression results do however confirm that global/local processing affects IAIP and that this effect is moderated by CPR (and RB).

Interestingly, there seems to be an influence of CPR on IAIP under local processing but not under global processing. I tested this observation with a sample-split, separating the results for global and local processing participants. The results of the regression for the global/local sample split are reported in table 7 and 8. The regression confirms the observation. While CPR (β = -1.1269), RB (β = -1.1586) and the interaction term CPRxRB (β = 0.2360) are significant ($p < 0.001$) under local processing, none is significant under global processing. Participants under global processing are not affected by their level of CPR while evaluating their IAIP. Under this processing style people with high cognitive resistance to innovations have an equally high level of IAIP as people with a low cognitive resistance to innovation. They are also not affected by their perceived level of product risk.

A closer look at the control variables shows additional differences between the processing styles. While under lo-

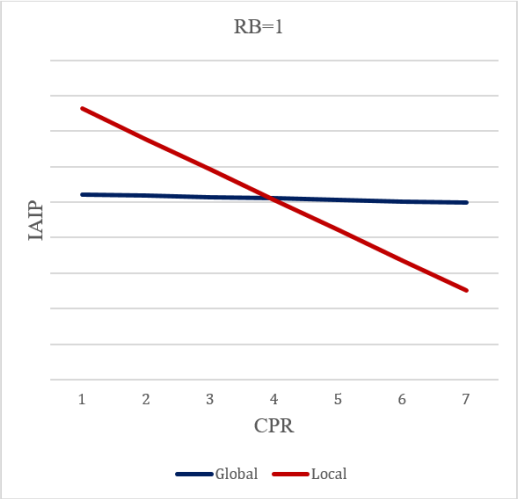

Figure 7: Graph for Three-Way Interaction for RB level 1.

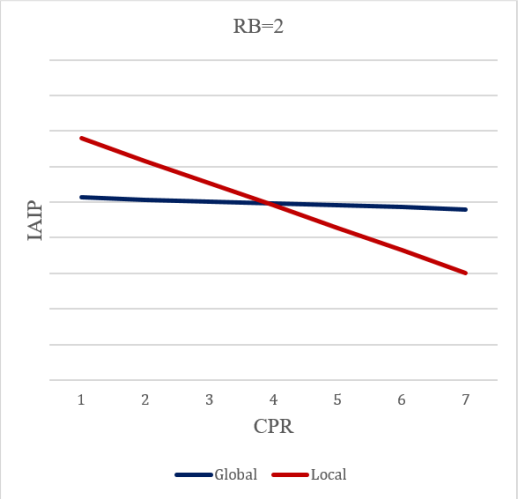

Figure 8: Graph for Three-Way Interaction for RB level 2.

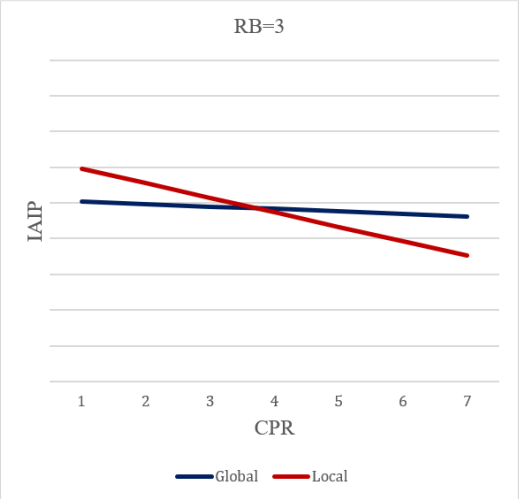

Figure 9: Graph for Three-Way Interaction for RB level 3.

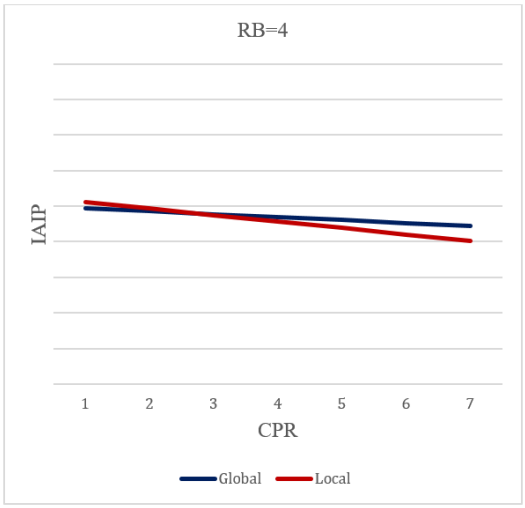

Figure 10: Graph for Three-Way Interaction for RB level 4.

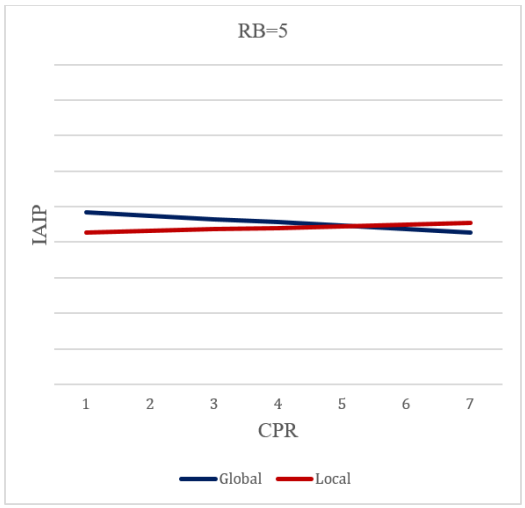

Figure 11: Graph for Three-Way Interaction for RB level 5.

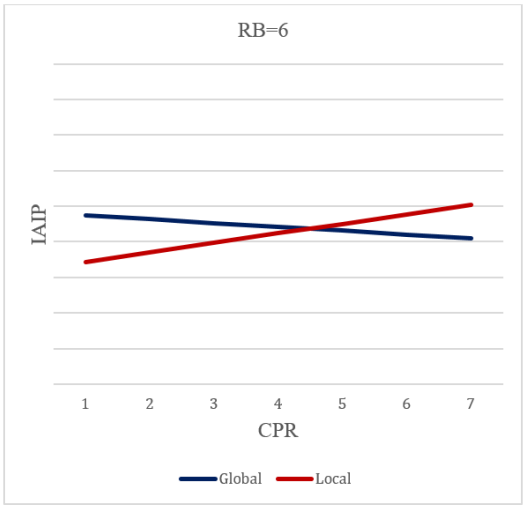

Figure 12: Graph for Three-Way Interaction for RB level 6.

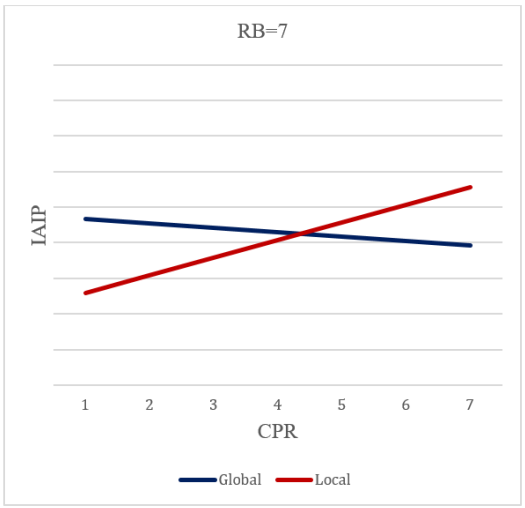

Figure 13: Graph for Three-Way Interaction for RB level 7.

Table 7: Regression Results for Sample-Split Local

		β	S.E.	Sig. (p)
LOCAL	(Constant)	10,2892	1,4201	0,0000
	CPR	-1,1269	0,2129	0,0000
	RB	-1,1586	0,2156	0,0000
	CPRxRB	0,2360	0,0490	0,0000
	INCONG	0,1906	0,0793	0,0182
	VB	0,0125	0,0375	0,7394
	CB	-0,1943	0,1047	0,0666
	UB	-0,3024	0,0721	0,0001
	PHR	0,1053	0,0780	0,1803
	Gender	0,2288	0,2449	0,3526
	Age	-0,0112	0,0128	0,3812
	Education	-0,0612	0,1800	0,7346
	Income	0,0729	0,0887	0,4133

Dependent variable: Intention to Adopt Innovative Product (IAIP), N=107

Table 8: Regression Results for Sample-Split Global

		β	S.E.	Sig. (p)
GLOBAL	(Constant)	5,1234	1,2691	0,0001
	CPR	-0,0344	0,2078	0,8687
	RB	-0,0360	0,1949	0,8537
	CPRxRB	-0,0174	0,0454	0,7019
	INCONG	0,1335	0,0656	0,0436
	VB	-0,0712	0,0300	0,0188
	CB	-0,3459	0,0747	0,0000
	UB	-0,2812	0,0560	0,0000
	PHR	0,1476	0,0614	0,0173
	Gender	0,2735	0,1919	0,1561
	Age	-0,0093	0,0101	0,3572
	Education	0,3205	0,1415	0,0248
	Income	0,0571	0,0677	0,4002

Dependent variable: Intention to Adopt Innovative Product (IAIP), N=180

cal processing all control variables, except INCONG (β = 0.1907, p < 0.05) and UB (β = -0.3023, p < 0.001), are insignificant, the situation is almost reversed under global processing. Here all control variables (except demographic variables gender, age, education and income) are significant. The regression results for the sample split therefore reveal that IAIP under local processing is determined by an entirely different set of factors than IAIP under global processing.

4.4. Summary of Results

The analysis and Post-Hoc analysis combined provided interesting results. Here I summarise the most important findings and point out gaps in the findings that could not be solved with the method of linear regression analysis.

The effect of processing style on IAIP can only be understood in combination with the interacting factors CPR and RB. Due to the counteracting interaction effects, linear regression without RB did not point to an influence of processing style. It did however confirm hypothesis 2 i.e. the negative effect of CPR. The three-way interaction of processing style, CPR and RB again confirmed hypothesis 2 and additionally showed negative effects for global processing style (contradicting hypothesis 1) and counteracting global-interaction terms. While the interaction for global processing and CPR was negative as well as the interaction for global processing RB the interaction combining global processing, CPR and RB was positive. This means, that the effects counteract each other and in sum result in no effect under the condition of global processing. This insight was supported by the results of the global/local-sample-split. Here the variables of RB and CPR have no influence on IAIP under the condition of global processing. In contrast, under the condition of local processing CPR and RB show negative effects on the dependent variable, which are weakened by a positive interaction effect of CPR and RB. While these are interesting findings, the linear regression results provide no insight into whether global processing is better than local processing or the other way around[9]. In sum, processing style has an effect on IAIP, and CPR has a negative effect under the condition of local processing but no effect under global processing.

5. Contribution

5.1. Contribution to Theory

This thesis set out to analyse two research questions: (1) Does the situational and dichotomous factor processing style affect IAIP and (2) does the effect vary depending on different levels of CPR? In the following I will interpret and discuss the findings against the backdrop of these research questions.

In line with NCT argumentation, the hypothesis of this thesis indicated that global processing might be an additional beneficial factor influencing IAIP. However, the results of the analysis point to a more hidden and at the same time more fundamental influence of processing style on IAIP that changes the composition of elements in the IDM. For the interpretation of the results and the discussion I will draw on the counter argument made for hypothesis 1. Here I argued that based on the similarity between construal level (abstract vs. concrete thinking) and global and local processing, insights from the affective-dependent time-discounting hypothesis could be transferred to processing style. Global processing would thus result in preferences influenced predominately by cognitive assessment of a stimuli. Local processing in contrast would result in preferences predominate influenced by affective assessment of a stimuli. At the same time, I argued in hypothesis 2 and 3 that CPR might either be a factor predominately rooted in negative affect or individual differences in the ability to learn new categories (cognitive ability). In line with the assumption that CPR is a predominately affective "problem", the results point to a negative influence of CPR under local processing (affective mode of evaluation) and no effect of CPR under global processing (cognitive mode of evaluation). While such an interpretation might be far-fechted based on the effect of CPR alone, the effect and insignificances of control variables in the global/local-sample-split regression provide strong support for this interpretation. Under the condition of local processing only CPR, RB and UB show any significant effect on IAIP. RB and UB are barriers to innovation that represent psychological resistance. At the same time all functional barriers to innovation show no significance under the condition of local processing. Under the condition of global processing all barriers to innovation representing functional barriers are significant but not CPR and RB. In other words, under local processing IAIP is entirely dependent on factor representing psychological or affective responses to innovation. On the other hand, under global processing CPR and RB has no influence, and factors representing a rational evaluation of functional values of a product determine IAIP. Processing style has therefore a hidden influence on IAIP by representing two different modes of evaluation for innovative products – a rational global and an irrational local evaluation mode. The interpretation of results as above does not only add an element to the IDM but changes the composition of IDM elements. IDM in the present form is a single sequential process. Here CPR as Passive Resistance precedes Active Resistance. This implies a precedence of affective responses to cognitive responses. By adding the insights from above, IDM would change into a process where cognitive and affective responses to a stimuli are evaluated at the same time but the weight given to affective vs. cognitive responses depend on the evaluation mode (global vs. local).

In the following I summarise the contribution and answer to the research questions. The first research question is affirmed. Processing style has an influence on IAIP by influencing the effect of factors that determine the IAIP. At the same time superiority of one processing style over the other could not be determined. The second research question can be affirmed. CPR under the condition of global processing has no

[9] Such an analysis would have made a special slope-difference test for three-way interactions necessary (Dawson & Richter, 2006) which was not part of the scope of this thesis.

effect, whereas it has a negative effect under the condition of local processing. This is also supported by the interaction results of the three-way interaction. The insights contribute to research by identifying a factor that results in two different evaluation modes for IAIP. This changes the IDM into a two-process model with weighted importance of cognitive vs. affective and psychological barrier to innovation.

5.2. Contribution to Practice

The adoption of innovative products can fail based on several reasons. The results of this thesis contribute to practice by identifying a factor (processing style) that can be beneficial for solving two of these problems.

First, innovation can fail, because companies are unsuccessful to reach out to the early majority of people, following a successful introduction of the product to innovators and early adopters. It is reasonable to assume that high CPR is more often found in people of the early majority, late majority and among the laggards. The results of this thesis prove that under global processing people are not influenced by their level of CPR. While processing style is a situational factor, it can be manipulated by several methods as multiple empirical research papers show. Global processing could therefore be introduced as a marketing instrument to reach the late-adopter-categories of consumers.

Secondly, new innovative product, especially those offered by start-ups, often hold a high level of perceived risk for customers due to unfamiliarity with the product and the company. As the results show, perceived risk has an effect on IAIP that depends on different level of CPR under local processing. Based on the results no statement can be made, whether global or local processing is better for high levels of risk and different types of consumers (CPR). However, the results do show that perceived risk has no influence on IAIP under global processing. Therefor stat-up should consider a communication of their product that is focused on activating a global processing style.

6. Implications and Further Research

6.1. Implications and Further Research in Theory

The findings have several implications for theory and cause new interesting theoretical research questions. In the following I will outline three implications and make suggestions for further research based on each implication.

First, CPR is in line with the interpretation outlined above, a construct rooting in a predominately affective "problem". As outlined in the hypothesis 3, this would explain CPR against the backdrop of Emotional Memory Theory. A learned affective response to change would result in the formation of personality traits that are associated with resistance to change (CPR) and evoke the same emotion whenever the person is confronted with a similar situation (innovation). The name Cognitive Passive Resistance would therefore be misleading. It would also imply that CPR is not a "predisposition" but a learned behaviour that could potentially be counteracted. The construct of CPR needs to be analysed in greater detail. Further research could examine the affective responses of people with high levels of CPR to confirm the interpretation and draw on psychology research to discover measures to counteract high CPR.

Secondly, the interpretation draws heavily on insight from Construal Level Theory. As already discussed in the theoretical background section, processing style and construal level definitions are very similar and are sometimes used interchangeably. Further research needs to take a closer look at the two concepts and determine their connection. This is especially true for the question of dichotomy. While many results point to dichotomy, the question remains open and research would benefit from a unified definition and scale.

Thirdly, the results in part contradict NCT. NCT presumes that global processing is beneficial to change/novelty and to innovation adoption behaviour by facilitating people's ability to solve incongruent stimuli through broader categorization. This thesis finds no general positive effect for global processing. Further research needs to examine the connection between processing mode and perceived incongruence to determine whether the positive effect of global processing might be mediated by perceived incongruence (which was integrated as a control variable of the regressions in this thesis).

6.2. Implications and Further Research for Practice

Several implications for practice can be drawn from the results. In the following I will discuss two implications and resulting practical research questions.

First, practice will need to find a way to activate global processing through their communication and advertisement. Several existing marketing instruments show similarities to processing level manipulations used in research. For example, future vs. past framing or naming analogies. The later might motivate consumers to find similarities, which has been shown to active global processing. The results of this thesis might also encourage practice to develop entirely new marketing instruments. The possibilities of virtual reality might offer a starting point. By virtually encouraging consumers to focus on global futures of a scene an activation of global processing style could be triggered. Research focussing on practical aspects could therefore look into the ability of these instruments to trigger global processing and its effect on IAIP and purchasing behaviour.

Secondly, practitioners might be specifically interested in the ability of converting high IAIP into actual sales. While the IDM presumed that the purchase decision is another step in an otherwise sequential process, insights of this thesis highlight that IAIP might change based on the situational factor processing style. An interesting research question would be whether global processing IAIP or local processing IAIP has a stronger effect on actual purchase decision and sales numbers or whether they are equally important.

7. Limitations and Further Research

Although this thesis provides interesting insight into the effect of cognitive processing style on IAIP the study has several limitations. First, the final sample can be viewed critically. The distribution of demographic variables (gender, age, education and income) does not represent the general population. It is possible that e.g. older people and less educated participants react differently than the relatively young and educated workers on Mturk. Replicating the study with a more divers set of participants might add additional insight and reliability. Secondly, due to bad data quality I excluded a large number of participants from the analysis. While dropping individual participants is in line with marketing research, excluding such a large number of participants could distort results by a) excluding participants with special demographic characteristics and b) due to a possible effect of cognitive processing style on concentration. Again, a replication study with more attentive group of participants could help to determine if results can be generalized. Thirdly, it was not tested whether the regression variables are independently, identically distributed (i. i. d.). Should the variables not be i. i. d. it has negative consequences for the consistency of the estimator. Fourth, the internal consistency of the moderating variable CPR (and the control variable CB) was below the acceptable α-value. As consequence, the reliability of the constructs can be questioned. Fifth, the results from the three-way interaction in the Post-Hoc analysis might be questioned based on low sample size. The additional analysis needs to be repeated with a larger sample to improve reliability. Sixth, the average rating of the comprehension of the product description was only medium high. This might have affected IAIP and the general evaluation of the product innovation. Seventh, the average rating for incongruence was only medium high. While the rating for product newness indicated high innovativeness, results might not be transferrable to product innovations with higher incongruence. Additional studies with different innovativeness ratings could bring additional insights and increase reliability.

8. Conclusion

The thesis aimed at contributing to the research in Product Innovation Management by uncovering a new factor that contributes to the decision to adopt innovative products. I succeeded in identifying processing style as the trigger for two different modes of evaluating product innovations – a cognitive i.e. rational mode and an affective, psychological i.e. irrational mode of evaluation. By identifying global processing as mode of evaluation that nullifies the negative effect of CPR an IAIP the gaol of the thesis has been achieved. Additionally, I made significant contribution to research by changing and improving the IDM and to practice by providing a potential solution to two practical problems of Product Innovation Management.

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