Trying to prosume:
Toward a perspective on prosumption

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This dissertation is dedicated to my parents Pu-cheng Xie and Guang-rong Liu, and to my son Alexander

仅以此书献给我的父母谢朴成，刘光荣和我的儿子洋洋

ABSTRACT

This study explores the motivational mechanisms underlying people's prosumption tendency. Prosumption refers to people producing goods and services for their own consumption. Although prosumption experiences are omnipresent in our daily life, few empirical and theoretical studies have addressed this phenomenon. In the current study, a theoretical framework that incorporates values and attitude-behavior relation theories has been developed and tested in the empirical context of food prosumption.

It was hypothesized that the influence flows from global values to domain-specific values and then to specific attitudes and behavior in food prosumption. Domain-specific values are values people attach to a specific domain. Three groups of hypotheses are proposed for the situation of preparing a dinner for friends for Norwegians. These address the relationships among global values, domain-specific values, and attitudes, the relationship between domain-specific values and the theory of trying, and the relationship within the theory of trying, respectively. Moreover, open questions were raised for the possible influence of situational differences and cultural variation on the predictability of the theory of trying. A survey design was chosen; questionnaires were obtained from Norwegian and Chinese household members.

The findings provide insights about why people prosume. The results show that global values affect domain-specific values in food prosumption. Further, domain-specific values have stronger impact on attitudes than global values and mediate the influence of global values on attitudes. The results also support that domain-specific values are the powerful explanatory factor behind prosumption tendency, evidenced by their strong impact on intention antecedents such as attitudes, self-efficacy, social norms, and past behavior. The hypothesized effects of these antecedents on prosumption intention occurred as predicted. Moreover, food prosumption is shown to be habitual in another situation of preparing a dinner for oneself. Finally, a cross-cultural validation of the theory of trying shows that the model predicts differently for Norwegian and Chinese in the situation of preparing a dinner for friends, but predicts similarly in the situation of preparing a dinner for oneself.

This dissertation contributes both theoretically and empirically to several existent streams of research such as value research and attitude-behavior-relation theories. Especially, this study is the first attempt (to our best knowledge) to systematically investigate prosumption behavior in general and food prosumption in particular. The managerial implications are discussed.

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Chapter 1 Introduction

The aim of this dissertation is to search psychological explanations for people's prosumption tendency. By prosumption, we mean that people produce goods and services for their own consumption. Prosumption experience is omnipresent in our daily life, such as cooking and grocery shopping. We argue that people's decision to prosume is not only determined by economic concerns, but also reveals a wide set of values and motivations. For instance, values people hold in general and values people perceive from a certain domain of prosumption may exert influence on their tendency to prosume. However, few empirical and theoretical contributions have focused on the phenomenon of prosumption. To address this gap, we have developed a theoretical framework that incorporates values and attitude-behavior relationship theories, and have tested it in the empirical context of food prosumption.

1.1 The phenomenon of prosumption

Prosumption is not new. Rather, it is common experience in consumer's everyday life. People routinely shop for groceries in the supermarket, prepare meals at home, work in their gardens, and decorate their houses. Some even repair their own cars, assemble furniture and computers, and make their own music CDs. When consumers produce some of the goods and services they consume, they become prosumers (Toffler 1980; Kotler 1986). The essence of being a prosumer is to produce goods and services for one's own consumption, which is different from that of being a consumer, purchasing goods and services in the marketplace.

Consumers participate in the process of producing goods and services for various reasons. For example: we cook at home for nutritional concerns or for economic reasons, we do online banking for convenience or for time saving, we do gardening for enjoyment or because we have to, we prepare breakfast by ourselves simply because we must eat and no other suitable/affordable alternatives are available.

Moreover, the development of modern technology and production methods increasingly encourage people to take on more active roles in such production process (Troye et al.2002;

Bendapudi and Leone 2003). For example, Internet technology allows people to participate in designing their own cars, shoes, clothes from the manufacturers' website.

The origin of the concept

The concepts, prosumer and prosumption, first appeared in Toffler's influential book *The Third Wave* (Toffler 1980). He prophesied "the emergence of a new class of consumers in the third wave (the post-industrial age)", whom he called prosumers. "These are people who choose to produce some of the goods and services they consume." Actually, prosumers exist in all the three waves according to Toffler.

In the first wave, the majority of the community members were prosumers on a technologically primitive basis. "They hunted or grew their own food, made their own clothing, and created their own amusements." Only a few members of the community traded their surplus output for things produced by others. In the second wave (after the Industrial Revolution), most people produced for exchange. The major group of remaining prosumers is housewives, because "they cooked, cleaned, sewed, knit, and shopped for their own use, not for pay." In the third wave (the post-industrial age), more people have shifted more of their time to prosumption activities. Or, prosumers have been brought back on the high technology basis in the third wave. As Toffler argued, first people have more free time as the workweek continues to decline; second, people obtain higher education and at the same time, can use their time in others ways enabled by advancing technology; third, more people tend to do their own work due to the rising cost of skilled labor; fourth, as work becomes increasingly mental in a technologically advancing society, they want more physical activities, including some prosumption activities; fifth, those who have a high sensitivity to quality and a strong instinct for workmanship will feel that they can produce better goods and services than what are available in the market; sixth, more people seek more self-expression by producing their own goods and services.

The definition of prosumption

Prosumption is better understood as a process. There are several distinct characteristics of prosumption. The first is people's participation in the production process of products and services. People participate in this process by providing their input of time, effort and skills. Second, people produce for their own consumption. In the case of products, they work on raw material in the production process, and get the final product. Their satisfaction with the

final product and their emotional experiences during the production process will affect their subsequent consumption experience. However, in the case of services, they participate in producing services and consuming these services simultaneously.

Prosumption is different from the traditional concept of production. First, it is the end consumers who take part in the production process. Second, prosumption is more than production; it extends forward from the production process to include consumption of the same piece of products or services and backwards to include supply and assortment. Prosumption distinguishes itself also from traditional concepts of consumption. People take a more active role in creating the products or services that they eventually consume; people also take a more active role in creating their own consumption experiences. Prosumption extends backwards from consumption to include the part of the production process that traditionally is under manufacturers' control. Therefore, prosumption is defined as "the combination of consumers' participation in the production process of products or services they eventually consume and their subsequent consumption experience" in the current study. It includes prosumption of both products and services. The degree to which consumers are involved in the production process may vary.

1.2 Significance of the topic and the positioning of this study

Prosumption is ubiquitous. People are involved in the production process of goods and services in different degrees. For consumers, prosumption allows them to produce values over and beyond those that are passively contained in the products and services; prosumption activities constitute an important aspect of quality of life.

For marketers, prosumption provides both challenges and new opportunities. Marketers first need to know in which products and services consumers are likely to be involved in the production process, then they could look for opportunities to facilitate prosumption activities. For example, marketers could create better tools for prosumers to use, or simplify the production process so that it is easier for people to participate. Internet technology also provides considerable opportunity for marketers to incorporate consumer's individual preferences from their websites.

In sum, prosumption is an omnipresent phenomenon. It represents an important part of our everyday life. It allows us consumers to create our own prosumption experience by participating in the production process; it also creates tremendous opportunity for marketers to cooperate with their own customers. Thus, a deep understanding of prosumption is valuable to both ordinary consumers and marketers.

However, surprisingly few theoretical and empirical studies have focused on prosumption in previous marketing and consumer research literature. One reason why little attention has been paid to prosumption in traditional research is due to its complexity. Prosumption is far more complex than the binary purchase/not purchase decision. The decision to prosume typically involves more than one single purchase act, in addition to an intricate pattern of acts required in the prosumption process. A prosumption process may also vary in complexity, with variation in input, process and output. The second reason for the neglect of prosumption is that it may not appear so closely linked to marketers' natural concern for purchase, which is a mirror image of sales and a direct determinant of profit. However, we contend that in order to fully understand consumers' purchase decisions, we need to understand why and how they engage in the prosumption process. Consumers who engage in elaborate prosumption processes may pose different challenges for marketers than those who want to keep prosumption at a minimum. Furthermore, people's participation in production may also influence their satisfaction of consumption experiences.

Although few studies have focused on prosumption, there are some scattered studies on prosumption-like behavior in marketing and consumer research literature. Previous research on customer participation in service production and household production relied mainly on an economic rationale. For example, early works on customer participation in service production focused on managing customers as partial employees and getting productivity gains by using customer labor. Household production literature also concentrates on assessing the economic value of household production from an economic perspective. However, we contend that people's decision to prosume is not determined solely by some effort and cost-minimization procedure, but may reflect a wide set of values and motives. Little is known about the socio-psychological aspects of people who take part in these processes. There is an urgent need for studies that investigate the psychological processes and motivations underlying people's prosumption tendencies. We claim that values people hold may serve as a possible motivational mechanism underlying their participation in the prosumption process.

1.3 Research objective

The purpose of this study is to develop a conceptual framework that incorporates aspects of several well-established theories to provide a deeper understanding of people's prosumption tendencies. Two streams of research have been integrated in our theoretical framework, research on attitude-behavior relations and research on values.

Research on attitude-behavior relations (Fishbein and Ajzen 1975, Ajzen 1991, Bagozzi and Warshaw 1990) has demonstrated that attitudes will be a good predictor of a behavior when the attitude is at same level of specificity. Further development in attitude-behavior relation models has provided a more refined structure to predictor behaviors. Nevertheless, these models can't explain why people hold their attitudes. On the other hand, research on values (Rokeach 1973, Clawson and Vinson 1978, Kahle 1980, Homer and Kahle 1988) assumes that values can both explain and influence attitudes and behavior across situations. A value is defined as "an enduring belief that a specific mode of conduct or end-state of existence is personally and socially preferable to alternative modes of conduct or end-state of existence" (Rokeach 1973). Since the generality of values is both its advantage and drawback in explaining specific behavior, Vinson (1977) further proposed a construct of "domain-specific values" in his value systems to link global values and product-attribute evaluations. Domain-specific values refer to the specific values people tie to a specific domain of interest.

The objective of this study is to provide an integrated theoretical framework based on these two schools of research. A general illustration of the framework underlying this dissertation is presented in Figure 1.1. Two sets of values are included in the model, the global values people hold in general and domain-specific values. Global values are supposed to influence domain-specific values, which in turn will affect antecedents of intention and behavior in a model of attitude-behavior relation (e.g. the theory of trying).

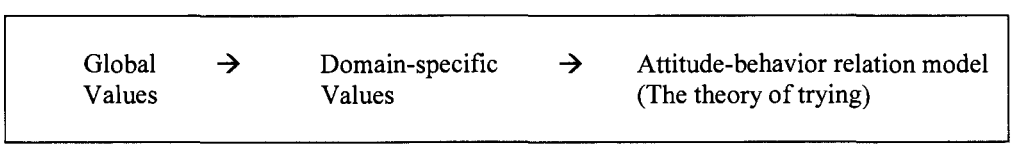


Figure 1.1: The theoretical framework

The major research question and sub-questions addressed in this study are listed in the following.

RQ: How can global values and domain-specific values explain people's prosumption tendency?

This involves an investigation of the flow of influence from global values to domain-specific values and further to specific prosumption attitudes and behavior. More specifically, this research question includes three sub-questions:

1) How do global values influence domain-specific values and prosumption tendency? What is the relationship between global values and domain-specific values?

2) How do domain-specific values influence attitudes and other antecedents in a model of attitude-behavior relation?

3) How do attitudes and other antecedents affect prosumption intentions and behavior?

The first sub-question implies an examination of how global values exert influence on prosumption tendency. It also includes an exploration of the relationship between these two sets of values and the possible mediation of domain-specific values. The third sub-question involves an investigation of the possible influences of different antecedents on prosumption intentions within a sub-model of attitude-behavior relation. The second question connects the value part and the attitudes-behavior part together by inspecting how domain-specific values affect different antecedents of prosumption intentions.

1.4 Organization of the dissertation

Chapter 2 is devoted to the literature review and the development of a conceptual model. Chapter 3 contains hypotheses in the model and their arguments. Chapter 4 presents the methodology consideration. Measurement models are presented in Chapter 5. Chapter 6 and 7 includes the structure models, hypotheses testing, and discussion.

In Chapter 2, relevant literature on prosumption-like behavior, attitude-behavior relations and value research is reviewed first. Then, the construct of domain-specific values is introduced to bridge the gap between global values and specific attitudes. An integrated theoretical framework is developed and presented afterwards. In Chapter 3, several groups of hypotheses

are presented along with a detailed demonstration of the theoretical model. Chapter 4 addresses general survey design, questionnaire design, and measurement considerations. The measurement of global values, domain-specific values, and dependent variables in the theory of trying are presented and discussed. The analyses are presented in Chapter 5 and Chapter 6. The analyses have been performed using LISREL. Descriptive statistics and measurement models are presented in Chapter 5. Structure models and multiple group analyses are presented in Chapter 6. Hypotheses testing and a discussion of the results are also included in this chapter. Finally, Chapter 7 contains a general discussion and suggestions for implications and future research.

Chapter 2 Theoretical background and conceptual model

This chapter reviews existing research and proposes a general theoretical framework to study the prosumption phenomenon. First, scattered pieces of studies that highlight prosumption-like behaviors will be briefly reviewed in Section 2.1. Then, in Section 2.2 and Section 2.3, two streams of research, theories about attitude-behavior relationship and research on values are briefly summarized and critically evaluated in terms of their respective insights and contributions for understanding prosumption. Furthermore, based on a specific theory of attitude-behavior relationship (e.g. the theory of trying) and value theory, a conceptual model is developed and presented in Section 2.4. At the end, there is a discussion about the impact of situation difference and cultural variation on the applicability of a sub-model of the conceptual framework in Section 2.5.

2.1 Research relevant to prosumption

Although few previous studies focus on prosumption, scattered pieces of research that investigated prosumption-like behavior do exist in the marketing literature. For instance, a broad perspective of co-production is found in the interpretive marketing literature. Firat et al. (1995) suggested that customers demand a role in production; in order to satisfy customers, marketers must open up more and more of their processes and systems to consumers' active participation. In this section, studies on customer participation in service and household production are briefly summarized. Their implications for studying prosumption are delineated. There is also a discussion of the need for a general theoretical framework for studying the psychological process underlying prosumption.

Customer participation in service

There exists a growing amount of research on customer participation in the service literature (Schneider and Bowen 1995, Lengnick-Hall 1996, Prahalad and Ramaswamy 2000, Bendapudi and Leone 2003). Customer participation is defined as "the degree to which the customer is involved in producing and delivering the service" (Dabholkar 1990). Extending this construct, Meuter and Bitner (1998) further distinguished among three type of service production: firm production, joint production and customer production. Firm production is a

situation in which the service is produced entirely by the firm and its employees; in joint production, both the customer and the firm's contact employees interact and participate in the production; customer production means the service is produced entirely by the customer, with no participation by the firm or its employees. We consider joint production and customer production of service are relevant to prosumption and give a brief review for both.

Joint production

Research on joint production in service production has two main focuses. First, the early works in this area emphasized why customers should participate in the production process from the viewpoint of firms. The benefits to the firm were defined in terms of productivity gains, with customer labor substituting employee labor (Fitzsimmons 1985, Lovelock and Young 1979, Mills, Chase, and Margulies 1983, Mills and Morris 1986). The second focus was to manage customers as partial employees and to identify when customers may be motivated to participate in production (Kelley, Donnelly and Skinner 1990, Lengnick-Hall 1996, Mills and Moberg 1982). This school of research takes the viewpoint of the firms and focuses on the monetary dimension of customer participation. Little is known about the effect that customer participation may have on their psychological processes. Until recently, only one study (Bendapudi and Lenon 2003) examined the effects of participation on customer satisfaction. It showed that given an identical outcome, customer satisfaction with a firm differs depending on whether a customer participates in production.

Customer production

Customer production is a situation in which the service is produced mainly by consumers. Research relating to customer production focuses on self-service. Self-service can be classified as technology-based self-service and non-technology-based self-service. For technology-based self-service, some empirical studies have focused primarily on different factors associated with such self-service. Ease of use, fun, control and waiting time are found to be important in evaluation of technology-based service (Dabholkar 1996, Davis 1989).

Safety concerns may also keep people from using technology-based self-service (Evans and Brown, 1988). Other empirical research has concentrated on characteristics of users vs. nonusers. Demographics are the main concern; the need for interaction with a service employee is also found to prevent the use of technology-based self-service (Dabholkar 1992, 1996). Although these results are very interesting, it is often difficult to ascertain people's preference for using technology apart from their preference for self-service. Moreover, recent

studies on service convenience suggest that the growing use of technology-based self-service is because they can reduce time and effort cost for consumers (Berry, Seiders and Grewal 2002; Meuter et al. 2000).

Other research focuses on non-technology based self-service, such as salad bar type of options in restaurants or catalog ordering from home. Some investigated the difference between consumers who use self-services and those who avoid them (Langeard et al. 1981, Bateson 1985). They found that there are individuals who would use the self-service option even without the monetary or convenience incentives; therefore, "there is a clear need to profile those consumers" (Bateson 1985). Others also (Korgaonkar and Moschis 1987) found certain characteristics of consumers (time-conscious, opinion leadership, and high-tech inclinations) predicted positive attitudes toward a specific technology-based self-service (e.g. videotext). These studies therefore suggested many differences in attitudes between those who prefer self-service and those who do not.

In sum, research on self-service began to take the viewpoint of consumers and examine their preferences toward self-service. This offered a good starting point to explore people's prosumption behavior.

Household production

Another school of research focusing on prosumption-like behavior is household production studies. In this research tradition, households are conceptualized as producers as well as consumers who produce commodities by combining input of goods and time according to the cost-minimization rules of the traditional theory of the firm (Becker 1965). This conceptualization of household production is close to Toffler's idea of prosumer in the second wave. Household members' input into the production with respect to time, money and endeavor is treated as sacrifices. In general, it is not acknowledged that the production process itself might be gratifying, which is over and beyond the gratification inherent in the products themselves.

Since household production is viewed as adding value both to the household itself and the whole society (Kooreman and Wunderink 1997), the objective of household economists is to identify suitable quantitative models to assess the value of household production from a macro-economic perspective. Altogether, household production was addressed from an

economic perspective; much of the research was based on mathematical modeling. No attempt was made to understand the socio-psychological consequence of household production.

Shopping literature

Finally, previous studies on shopping may also be relevant to prosumption behavior. First, shopping behavior involves sorting and assortment functions that can be considered as part of prosumption. Second, instead of only treating the time and energy that consumers expend in product acquisition as a sacrifice, the shopping literature has argued that shopping experiences can indeed produce intrinsic benefits for consumers (Belk, 1987; Fischer and Arnold, 1990; Sherry, 1990; Miller 1998), both utilitarian benefits and hedonic benefits (Babin et al, 1994). Shopping has been singled out as providing both task-related, or product-acquisition (Bloch & Richins, 1983), and hedonic benefits through response evoked during the experience (Bloch & Bruce, 1984). In sum, intrinsic benefits from shopping reflect the more specific values people perceive from shopping behavior, which is close to Vinson's idea of domain-specific values. However, shopping is different from prosumption in that different shopping behavior has more in common than prosumption behavior in different domains.

Summary

The abovementioned research has focused on prosumption-like behavior from different perspectives. Studies on joint production in service rely mainly on the economic rational and focus on gains to firms. Household production researchers also take an economic perspective and concentrate on mathematical modeling of the production process. These studies have investigated prosumption from an economic perspective. However, little is known about the socio-psychological aspect of prosumption or prosumption-like behavior. Research on self-service has begun to look at consumers' participation in production from the point of view of consumers. Although this research is heading in the right direction, there is a lack of a broad conceptual framework to explore the psychological processes underlying prosumption behavior from the viewpoint of consumers. The purpose of the current study is to develop such a conceptual framework to explore the socio-psychological aspects of the prosumption phenomenon.

2.2 Attitude-behavior relationship

In order to investigate such a complex phenomenon as prosumption, we need to identify theories that are effective to study it. Research on attitude-behavior relation seems to be a suitable candidate, because attitude is a good predictor of the corresponding behavior at the same level of specificity. Moreover, attitudes are not the only determinants of human behavior. People are sometimes motivated to comply with the expectations of important other people. Social norms can override one's own attitude on occasion (e.g. in the theory of reasoned action, Fishbein and Ajzen 1975). Further developments in attitudes-behavior theories include more variables to count for variance in intentions and behavior. Perceived behavioral control (e.g. in the theory of planned behavior, Ajzen 1991), attitude components and past experiences (e.g. in the theory of trying, Bagozzi and Warshaw 1990) are incorporated to predict behaviors that are not under volitional control and goals.

Since people's prosumption behaviors are determined by multiple forces, theories on attitude-behavior relations have the potential to explain people's prosumption tendencies. These theories account for different sources that influence behavior. In this section, we will briefly review the attitude constructs and three major theories on attitude-behavior relations: the theory of reasoned action, the theory of planned behavior, and the theory of trying.

The attitude construct

Attitude has been called "the most distinctive and indispensable concept in contemporary American social psychology" (Allport 1935). Extensive literature attests to the fact that attitudes often powerfully influence perception, cognition, and behavior, profoundly shaping people's interactions with the social world (Eagly and Chaiken 1993, Visser and Cooper 2003). The concept of consumers' attitudes is also one of the most important concepts in the study of consumer behavior. Each year marketers spend millions of dollars researching consumers' attitudes toward products and brands, trying to influence those attitudes.

Historically, the most prominent framework in the study of attitudes has been the tripartite view of attitude (Katz and Stotland 1959, Rosenberg and Hovland 1960). In this view, the attitude is considered as comprising three related components: cognition (knowledge about the object), affect (positive or negative evaluations of the object), and conation (intentions or actual behavior toward the object).

This tripartite view was criticized for its several dubious assumptions. First, an attitude should be manifested by all three components. That is, all three components must be present for an attitude to exist. However, research suggests that attitudes can form as a result of any one (or combination) of the three components. Moreover, the roots from which the attitude is formed have implications for the strength and persistence of the attitude. Second, the three components are expected to be consistent with each other, given their common dependency on an underlying construct. This assumption rails against common sense. For instance, it is easy to imagine that someone can believe reproductive rights should be protected, and at the same time has emotional reactions to abortion that are negative (Rosenberg 1968). These criticism leads to the unidimensionalist view of attitude. In this view, attitude is treated as a simple, unidimensional concept—the amount of affect a person feels for an object (Thurstone, 1931; Fishbein, 1963). An attitude can be defined as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein and Ajzen, 1975, p.6). More recently, some research also supports an emerging view that attitudes have distinct affective and evaluative components (Trafimow and Sheeran 1998, Bagozzi, Lee and Van Loo 2001).

Research on attitude-behavior relation

A considerable body of literature exists concerning attitudes. Most research addresses the structure and measurement of attitudes as well as the formation, change and persistence of attitudes (Eagly and Chaiken 1993). Although the enduring interest in attitude research is because of the ability of attitudes to predict and direct people's behavior, our understanding of the influence of attitudes on behavior is much less developed (Bagozzi and Kimmel 1995).

Attitudes and their end product – behavior – have suffered a troubled history (see McGuire 1985, for a review). For a long time, it has been assumed that attitudes predict subsequent behavior. However, researchers questioned this assumption seriously in the late 1960s and early 1970s. Some even advocated abandoning the attitude construct because of the low attitude-behavior correlations (Wicker 1971). After a brief period of despair, some researchers (Ajzen and Fishbein 1977) argued that the predictive power of attitudes on behavior could be due to a lack of correspondence in specificity between the two constructs. According to what they called the "correspondence principle", attitudes and behavior correspond when their degree of specificity corresponds. This reasoning has received tremendous empirical support (Fishbein and Ajzen 1975, Davidson and Jaccard 1979, Kraus

1995). With few exceptions (Fazio 1986, 1990), investigations into the influence of attitudes on behavior have been guided by one paradigm, the theory of reasoned action.

The theory of reasoned action and its extensions

The best-known and most widely supported theory on attitude-behavior relation is the theory of reasoned action (Fishbein and Ajzen 1975). It takes into account the correspondence principle. Attitudes and behavior are measured at the same level of specificity. As shown in Figure 2.1, in their model behavior is determined by behavioral intentions. These behavioral intentions are, in turn, influenced by attitudes toward the behavior and social norms. Attitudes toward the behavior refer to one's positive or negative evaluations of performing the behavior; social norms refer to the perceived social pressure to perform or not to perform the behavior. The values of attitudes toward the behavior and social norms can be either positive or negative; respectively, they can increase or decrease the likelihood of forming a behavioral intention.

In addition to the attitude and social norms proposed, perceived behavioral control has been added in the theory of planned behavior (Ajzen 1991) as the third factor to influence intention and behavior, as shown in Figure 2.2. Perceived behavioral control is defined as "the person's beliefs as to how easy or difficult performance of the behavior is likely to be" (Ajzen 1985). This construct is included to predict behaviors that are not completely under volitional control. Perceived behavioral control is supposed to reflect the opportunities for performing a behavior and/or the requisite resources needed for acting. Perceived behavioral control influences behavior both directly and indirectly through intentions. The direct path from perceived behavioral control to behavior represents actual control over opportunities or resources. Therefore it is non-volitional source of influence (Ajzen 1987). However, the path from perceived behavioral control to intention represents a volitional process. It captures the motivational influence of control on behavior through the initiation of intention formation or activation (Ajzen 1991). The inclusion of perceived behavioral control has been found to increase the predictive power of the model (Madden et al. 1992).

As shown in Figure 2.3, the theory of trying (Bagozzi and Warshaw 1990) further expands on the theory of planned behavior. This theory was designed to explain striving to perform a behavior or achieve a goal. They argued that many behaviors are subject to impediments.

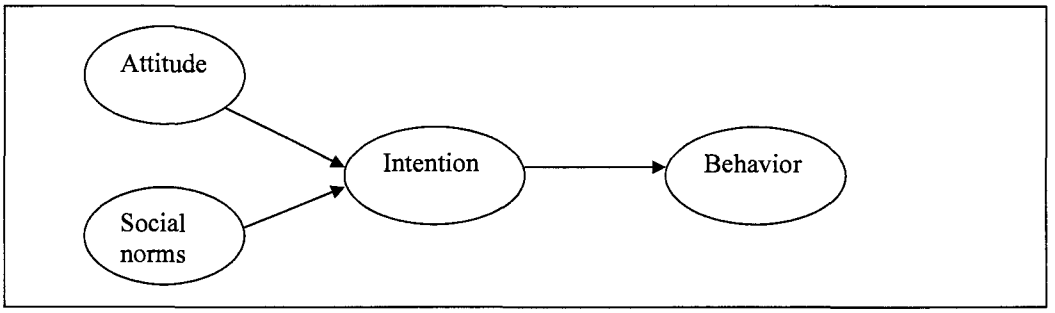


Figure 2.1: The theory of reasoned action

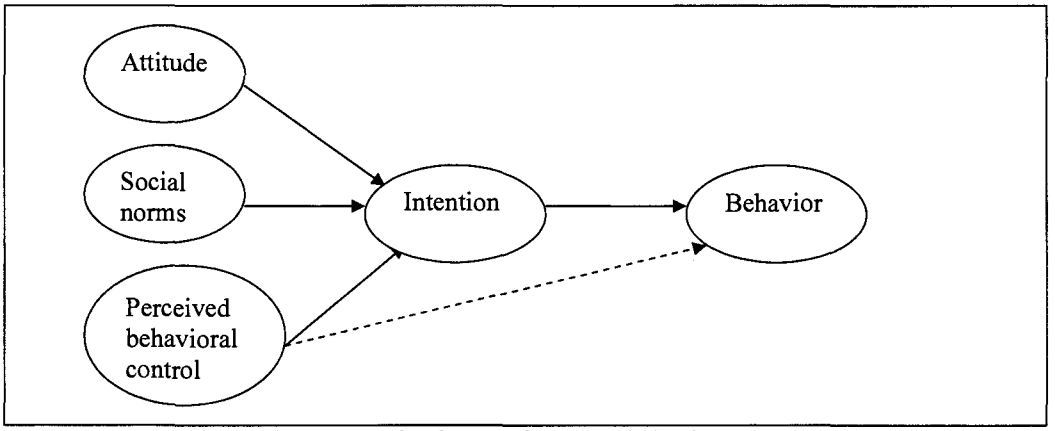
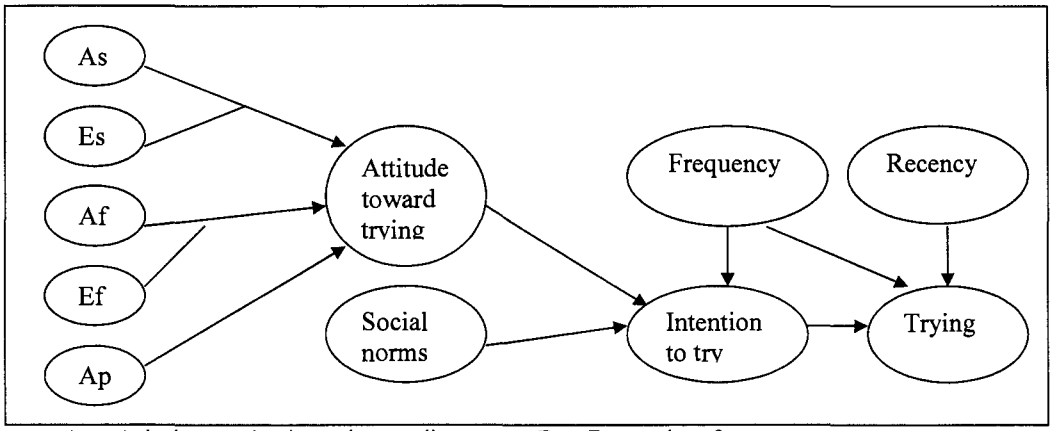


Figure 2.2: The theory of planned behavior



As – Attitude toward trying and succeeding
Es – Expectation of success
Af – Attitude toward trying and failing
Ef – Expectation of failure
Ap – Attitude toward the trying process

Figure2.3: The theory of trying

Therefore, they are considered as problematic as to their outcome or success. Under such conditions, people are thought to approach decision-making from the viewpoint of trying to achieve a behavioral goal. The theory of trying is one of most advanced versions of attitude-behavior theories. It introduced three attitude components to account for the outcomes and the process of trying: Attitude toward trying and succeeding (As), Attitude toward trying and failing (Af), and attitude toward the trying process (Ap). Furthermore, attitude toward trying and succeeding and failing will interact with expectation of success and failure, respectively, to influence intention. A noteworthy difference between the theory of trying and the theory of planned behavior is the integration of expectations of success and failure into the former and the inclusion of perceived behavioral control in the latter. In addition, it includes the effect of past behavior on intention and behavior. Frequency of past behavior affects both intentions and behavior, however, recency only influences behavior. The theory of trying has also received empirical support (Bagozzi and Warshaw 1990, Bagozzi et al. 1992).

Although these models have received considerable empirical support, they have also been criticized for some shortcomings (Fazio and Olson 2003). They argue that in these models, the attitudes become too specific, which risks turning the attitude-behavior relationship into a tautology. Moreover, the behavior is treated as intentional and based on the output of deliberate consideration of expected values of that behavior, which they argue is not always the case.

In the current study, we consider theories on attitude-behavior relations are suitable as a general theoretical framework to study prosumption. First, attitudes do predict behavior. One way to truly understand prosumption behavior is to examine people's underlying attitude toward prosumption. Second, these models also take account of other sources that influence behavior, such as social pressure, perceived ability to perform a behavior, and past experience. As discussed, prosumption is a complex process and different factors will affect people's intentions and behavior in this process. Therefore, these theories are suitable for explaining complex prosumption behavior. Third, these models are well established in the literature, in terms of both thorough theorizing and empirical support. In order to explore prosumption, an understudied phenomenon, it is less risky to apply a well-established theoretical framework than to develop a brand-new theory.

The drawback of these models is that the formation of attitudes is based on expectancy-value models. The expectancy-value approach addresses a narrow mechanism, which is only based on the assessment of behavioral consequences and their evaluations. However, these models don't address the underlying mechanism behind such evaluations. For example, they can't explain why people evaluate behavioral consequences differently or why they react toward social pressure differently. In this study, we would like to explore the underlying motivations behind people's attitudes and the other antecedents of intentions (e.g. social norms, perceived behavior control) in these theories. Value research seems promising to answer these "why"questions.

2.3 Values and value system

In the tradition of value research, attitudes and behavior have been explained by the values people hold. The potential of values for predicting consumption behavior was recognized in the 1970s. As Rokeach (1973) stated, the consequences of human values are manifested in virtually all phenomena that social scientists might consider worthy of investigation. Moreover, values "can perhaps equal or surpass the contributions of other major constructs including attitudes, product attributes, degree of deliberation, product classifications, and life styles"(Clawson and Vinson 1978: p.396). Value research blossomed in the 1980s as scholars turned their attention and efforts to applying the values approach to a variety of consumer research issues.

A value is "an enduring belief that a specific mode of conduct or end-state of existence is personally and socially preferable to alternative modes of conduct or end-state of existence" (Rokeach 1973, p.5). Values are distinct from attitudes. Attitudes are less enduring than values and occupy a more peripheral position in a person's cognitive system (Kamakura and Novak 1992).

Values are a powerful explanation of human behavior, and values have a great impact on human behavior as well. Values influence behaviors not only directly, but also indirectly through intervening variables such as attitude (Carman 1977, Kahle 1980, Homer and Kahle 1988). As Rokeach (1968) suggests, values are more important than attitudes, because they are a determinant of attitudes and behavior. Additionally, because individuals possess fewer

personal values than attitudes, the value concept is a more parsimonious way of explaining behaviors. Even in a specific situation, values influence concrete behaviors, "actual selections of behavior result from concrete motivations in specific situations...are partly determined by prior beliefs and values of the actor" (Williams 1979).

Ample empirical evidence of the influence of values on consumer behavior also exists. Differences in values have been shown to relate to significant differences in attitudes and behavior in a variety of empirical contexts: automobile purchase (Henry 1976), choice of leisure activities (Beaty, Kahle, Homer and Misra 1985), effects and consequences of media usage (Ball-Rokeach, Rokeach and Grube 1984), and natural food shopping (Homer and Kahle 1988), etc.

Value-attitude-behavior hierarchy

Kahle further advances his argument of value-behavior relationship from the point of view of social adaptation (Kahle 1980, 1983; Kahle, Kulka and Klingel 1980; Piner and Kahle 1984). According to Kahle, values are a type of social cognition that functions to facilitate adaptation to one's environment. "Values are the most abstract of the social cognitions, and they reflect the most basic characteristics of adaptation. These abstractions serve as prototypes from which attitude and behaviors are manufactured." As he contends, values are the most abstract cognitions; attitudes are less abstract social cognitions that are manufactured from values. Values guide individuals about which situations to enter and about what they do in those situations. Therefore, within a given situation, the influence should theoretically flow from abstract values to midrange attitudes to specific behaviors. Kahle called this sequence the value→ attitude→ behavior hierarchy. This hierarchy gives a reasonable structure of relationships among values, attitudes and behavior and has received empirical support in a study on natural food shopping behavior (Homer and Kahle 1988).

Critical evaluation

To sum up, this stream of research suggests values have the potential to help clarify the understanding of consumers' motivations. Values influence behavior in general and relate to product and brand choice criteria in consumption in particular. Values can serve as the underlying motivations behind attitudes and other antecedents of intentions and behavior. Therefore, a combination of models on attitude-behavior relation and Kahle's value→

attitude→ behavior hierarchy will provide us a powerful research tool for understanding people's prosumption behavior.

However, Kahle's hierarchy also shares the common weakness of value research: the limited ability of values in explaining specific attitudes and behavior. Although values play a pervasive role in all aspects of human life (Rokeach 1973), their generality is both their strength and weakness in explaining specific attitudes and behavior. Values guide actions and judgments across specific situations. However, in each specific situation, values only explain a very limited portion of variance in specific attitudes and behavior. A similar argument was also raised in motivation research. Though general motives are presumed to apply universally across contexts, their main drawback lies in their inability to account for specific actions and to point out particular strategies for influencing behavior (Bagozzi et al. 2003). General needs or categories of goals may provide a baseline for action, but they are distal determinants at best, perhaps working through values, which, in turn, shape goals and then volition to act (Meglino and Ravlin 1998). What may be required for better predictions of particular actions are context-specific motives rather than general needs or goals, per se (Mowday and Sutton 1993).

Therefore, we need an additional construct to capture the more specific characteristics of the domain of interest. Vinson's construct of "domain-specific values" shows great promise for bridging the gap between specific attitudes and global values.

Value system and domain-specific values

Vinson introduced the construct of "domain-specific values" in his theory of value system (Vinson et. al 1977). He proposed that values could be investigated at three levels of abstraction. These levels, arranged in a hierarchical network, are referred to as global values, domain-specific values and evaluations of product attributes. Global values are centrally held and enduring beliefs, which are equivalent to the abovementioned values of Rokeach (1973) and Kahle (1980). Domain-specific values are intermediate values that bridge the gap between global values and product-attribute evaluations. These "reflect the belief that people acquire values through experiences in specific situations or domains of activity, and that behavior cannot be understood or efficiently predicted except in the context of a specific environment" (Vinson et al. 1977). Thus, he contended "individuals arrive at values specific to economic transactions through economic exchange and consumption, at social values

through familial and peer group interaction, at religious values through religious instruction..."

According to Vinson, the three levels of values do not exist as sharply separated and unconnected elements. They coexist in an interconnected hierarchical structure, mutually dependent and at least partially consistent. Global values exert influence on each other as well as affect the more peripherally located domain-specific values. In turn, domain-specific values are also inter-connected and further influence people's evaluative beliefs of product attributes.

Critical evaluation

Vinson's theory of value system depicts relationships among values at different levels of a hierarchical system. His construct of domain-specific values especially provides us with a possible alternative to overcome the difficulty of global values in explaining and predicting attitudes and behavior in a specific domain. He also described briefly the relationships between global values and domain-specific values: global values exert influence on domain-specific values; their relationships are partially consistent. Nevertheless, Vinson didn't present a clear definition of domain-specific values, nor did he discuss how to measure it.

If we integrate Kahle's hierarchy and Vinson's value system, we get the following model:

(Global values→ Domain-specific values)→Attitude→Behavior

Values are measured at two levels of abstraction. Both global values and domain-specific values will impact attitudes, and attitudes, in turn, will influence behavior. Global values might influence attitudes both directly and indirectly through domain-specific values. Domain-specific values will overcome the shortcoming of global values – generality; they will provide a better explanation of specific attitudes and behavior. This combined model keeps values as the underlying motivations behind attitudes and behavior. In addition, it incorporates domain-specific values that bridge the gap between global values and specific attitudes. Therefore, we would like to integrate this model with an attitude-behavior-relation model to develop a conceptual framework for studying prosumption. However, before we turn to the conceptual model in more detail, first we need to address another important issue in value research, the measurement of values.

Measurement of values

Values show great promise as a research tool for understanding human behavior. A meaningful measurement instrument of values is crucial in applying this construct in empirical studies. Several measurement scales of values (global values) are available in the existant literature.

Much of the research in marketing or consumer behavior initially focused on the conceptual and measurement contributions of Rokeach (1968, 1973). The Rokeach Values Survey asks subjects to rank the importance of 18 instrumental values and 18 end values. The Rokeach Values Survey has been criticized for its use of rank ordering, which provides less information than interval or ratio-level instruments (Clawson and Vison 1978, Kamakura and Mazzon 1991). It is also a cumbersome exercise for subjects to rank the importance of 18 items, particularly for the values in the middle range of importance. Solutions to these problems have included substitution of ranking exercises with Likert-type scales (Vison et al. 1977) and paired comparison (Reynolds and Jolly 1980). The former approach yielded poor reliability and yea saying; the latter one continued reliance on non-metric data.

Another scale, Value and life styles (VALS) (Mitchell 1983), consists of 34 questions that are used to classify respondents into one of nine lifestyle groups: achievers, belongers, emulators, experiential, I-am-me, integrated, societally conscious, survivors, and sustainers. This approach has been criticized for its poor convergent and discriminant validity when subjected to an analysis using the multi-trait-multi-method matrix (Lastovicka et al. 1990).

More recently, Kahle's (1983) 9-item List of Values (LOV) has become popular as a feasible option for exploring aspects of consumer behavior. The LOV synthesizes Maslow's (1954) hierarchy of needs, the values-related work of Feather (1975) and Rokeach (1973), and social adaptation theory (Kahle 1984). The scale is a list of nine social values, the importance of which respondents could be asked to rank, rate, or evaluate via paired comparison. These nine values are sense of belonging, excitement, warm relationships with others, self-fulfillment, being well respected, fun and enjoyment, security, self-respect, and a sense of accomplishment.

Among these three measures, the List of Values scale has been claimed to be the best. Compared to RVS, Beatty et al. (1985) found that the LOV contained a higher percentage of

items that respondents claimed influenced them in their daily lives and was found to be more parsimonious and easier and quicker to administer. Compared to VALS, Kahle et al. (1986) concluded that LOV "has greater predictive utility than does VALS in consumer behavior trends". Another advantage of LOV over VALS was that it collected demographic information separately, allowing the researchers to identify the source of influence. LOV was also found to be more accessible and easier to administer.

Additionally, Herche (1994) has developed a Multi-Item adaptation of the List of Values (MILOV). Essentially, MILOV is a 44-item operationalization of the List of Values in order to overcome the weakness of single-item measures. Each item was administered in a nine-point Likert-scale format. He revealed evidence of a substantial improvement in the ability to predict behavior using the MILOV measures. We consider Herche's scale suitable to measure global values in the current study, because it is an adaptation of the List of Value scale with multiple items.

2.4 The conceptual model

As mentioned above, we would like to build up a conceptual framework to investigate prosumption based on value research and attitude-behavior relation models. More specifically, we would like to combine Kahle's value→ attitude→ behavior hierarchy, Vinson's value system, and a model of attitude-behavior relations to develop an integrated model. For this purpose, we need to choose a suitable model of attitude-behavior relations first. In the previous section, three attitude-behavior relation models were presented: the theory of reasoned action, the theory of planned behavior, and the theory of trying. For this study, we have chosen the theory of trying as our building blocks for the conceptual model.

2.4.1 The theory of trying

Among the models on attitude-behavior relation, the theory of trying is one of the most refined versions. We consider it as most promising and appropriate for studying prosumption behavior, because it is reasonable to conceive prosumption behavior as a process of trying. Prosumption might consist of several acts, so it is relatively easy to run into impediments in a prosumption process. Therefore, it is sensible to consider prosumption from the viewpoint of trying to achieve a behavioral goal.

Compared to the theory of reasoned action and planned behavior, the theory of trying has the following advantages for studying prosumption behavior. The first relates to the conceptualization of attitudes. Attitude has been treated as a unidimensional construct in both the theory of reasoned action and the theory of planned behavior. "Attitude is equal to the sum of the product of beliefs and evaluations". (Ajzen and Fishbein 1980) This unidimensional conceptualization of attitude is especially appropriate for behaviors under volitional control, and one reacts with a favorable or unfavorable evaluation of performing the act as a whole. However, this notion has been challenged by several researchers. "Cognitive elements regarding consequences of a behavior may be qualitatively different and are therefore likely to be organized into different schema or categories; these categories have different weights attached and may have separate influences on attitude" (Shimp and Kavas 1984).

In the theory of trying, attitude toward acts perceived as problematic is conceptualized as having three components, corresponding to three classes of outcomes or happenings typical of goal pursuits: trying and succeeding, trying and failing, and the process of striving. Attitude toward trying and succeeding (As) and attitude toward trying and failing (Af) address the anticipated consequences of performing or not performing an action, or of achieving or not achieving a goal. The third component, attitude toward process (Ap), speaks to the pleasures and pains one would experience in an attempt to perform an action or pursue a goal. As evidence for construct validity, Bagozzi and Warshaw (1990) found convergent and discriminate validity for measurements of the three attitude components by studying losing weight behavior. To the extent that attitudes can be validly represented in these three components, it is likely that the traditional unidimensional operationalization will yield an average of the components and obscure the possible differential dependence of intentions on each component in empirical tests (Bagozzi and Kimmel, 1995) and the possible differential dependence of the attitude components on values. When we consider the prosumption process as a process of trying, the three attitude components in the theory of trying are a suitable structure to capture people's evaluations of the prosumption process.

The second advantage is that outcome expectations are included in the theory of trying to take account for behaviors under incomplete volitional control. Attitudes toward trying and succeeding and failing were argued to influence the global attitude and intention to the extent that expectations of success are high and expectations of failure are low, respectively. As we

know, the theory of reasoned action doesn't have any mechanism that addresses behavior under incomplete volitional control. But the theory of planned behavior has the construct of perceived behavior control. According to Bagozzi (1990), the meaning of Expectation of success/failure is very close to that of perceived behavior control. However, later he made a clear distinction between the two concepts and (Bagozzi, 1992) argued that both concepts are necessary for a full explanation of trying. Since prosumption behaviors are usually subjected to impediments, a construct such as perceived behavioral control or outcome expectations is needed to take into account the problem of incomplete volitional control.

The final advantage of using the theory of trying to address prosumption is the inclusion of the effects of past behavior. The effects are separated into two variables: frequency of past behavior and recency of past behavior. Both frequency and recency of past behavior were assumed to impact behavior, however only frequency of past behavior was proposed to influence intentions. Since many prosumption behaviors are frequent practices in our daily life, the inclusion of past behavior in the model will provide a better explanation and prediction for prosumption behavior.

To sum up, the theory of trying was chosen from the three attitude-behavior-relation models to build up our conceptual model due to the following reasons. First, its three attitude components can capture different groups of behavioral consequences in a prosumption process. Second, it includes a construct such as outcome expectations to consider behaviors under incomplete volitional control. The third, its inclusion of the effects of past behavior, also adds insight to understanding people's prosumption behavior that is performed frequently. In our model, we also implement some revision of the original model of the theory of trying, which we will discuss in more detail later.

2.4.2 Value dimensions

As discussed earlier, two sets of values (e.g. global values and domain-specific values) will be added to the theory of trying in order to explain attitudes and behavior toward prosumption. Between these two sets of values, global values will influence domain-specific values, but global values are only partially consistent with their corresponding domain-specific values.

Before we examine how global values might influence domain-specific values, we need to consider several measurement issues of these values first. The List of Values scale has been

claimed to be the best to measure global values, and it measures nine different values. If one were to imagine that these nine global values have nine corresponding domain-specific values in a domain of interest, the relationships between these two sets of values would be rather complex. Therefore, it would be interesting to see if it is possible to reduce the nine LOV values to a smaller number of underlying dimensions.

Homer and Kahle found an external dimension, an internal dimension and a fun/excitement dimension in their study on natural food shopping (1988). The external dimension includes values such as sense of belonging, being-well respected, security, and warm relationship with others; the internal dimension consists of self-fulfillment, sense of accomplishment, and self-respect; the fun/excitement dimension contains fun and enjoyment, and excitement. Their labeling of "external" vs. "internal" is used merely to communicate that the differences "depend on others versus depend on oneself" to acquire the values. Another independent study also found three underlying value dimensions by mapping LOV values (Kamakura and Novak 1992). These dimensions were labeled as empathy, achievement, and hedonism. Similarly, the empathy dimension has high weights on "warm relationships with others" and "a sense of belonging", their achievement dimension weights highly on "sense of accomplishment", "self-respect", and "self-fulfillment", and the hedonism dimension weighs highly on "fun and enjoyment" and "excitement". In sum, these studies suggest that global values measured by the LOV scale (List of Values) could have three underlying dimensions based on the nine values.

Because these three underlying value dimensions have a much simpler structure than the nine values measured directly by LOV, we have adapted this three-dimensional structure in the current study. To make the labeling more clear and meaningful, we have labeled the three value dimensions as the interpersonal, personal, and fun dimensions. Our interpersonal dimension corresponds to the external or empathy dimension in previous studies; our personal dimension corresponds to the internal or achievement dimension, and our fun dimension corresponds to the fun/enjoyment or hedonism dimension.

As mentioned before, we have adopted a MILOV scale (a Multi-Item adaptation to the List of Values) to measure global values. Because MILOV is a multi-item version of LOV, we expect that values measured by MILOV will also show a three-dimensional structure, for instance in the second-order factor level. Moreover, domain-specific values in this study

were measured by a self-developed scale. Items in this scale were designed with correspondence to MILOV, but they were operationalized in the domain of interest. We also expect the domain-specific values to show a similar three-dimensional pattern.

2.4.3 The conceptual model

The conceptual model in this study is shown in Figure 2.4. It is an extended model that incorporates two sets of values into the theory of trying as the explanatory mechanism for attitudes and behavior. We argue that such an extended version of the theory of trying is suitable for studying prosumption behavior, because it considers not only traditional important antecedents of intentions and behavior, but also the deep motivations behind these antecedents. The incorporation of values provides the opportunity to explain these underlying motivations.

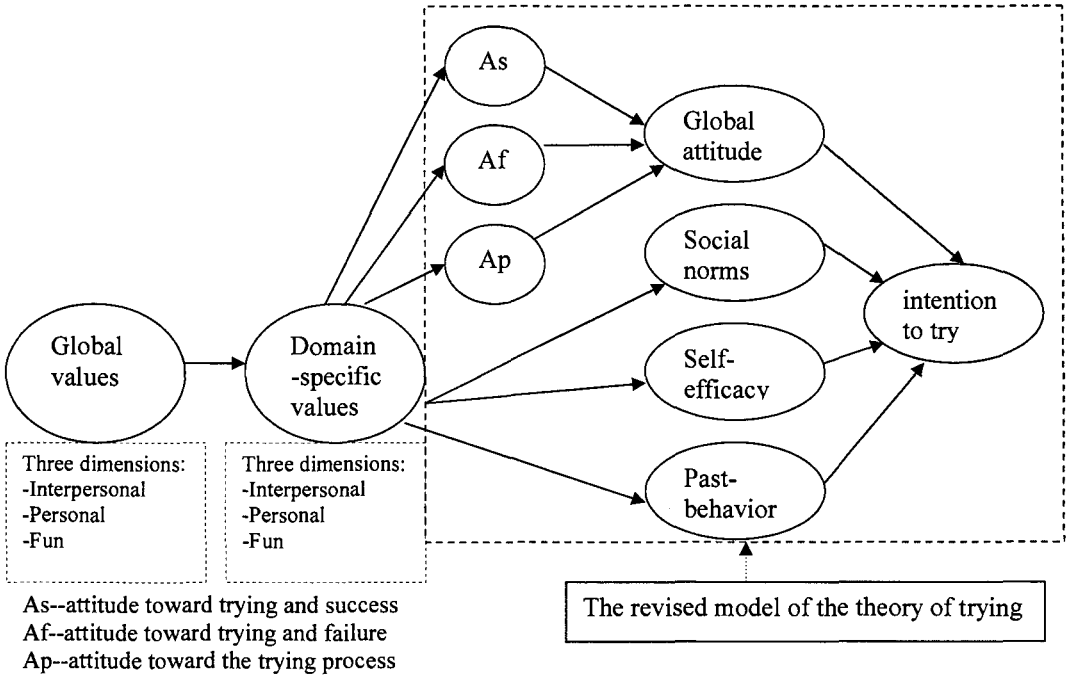


Figure 2.4: The conceptual model

Moreover, the phenomenon of prosumption is very understudied; few theoretical conceptualizations and empirical evidence on prosumption are available. We are better off applying established theories to address a less explored phenomenon. Our conceptual model

is derived from two well-established streams of research, and it provides a good starting point for exploring prosumption behavior.

The whole consists of two major parts. The first part is a revised version of the theory of trying. The second part deals with the relations between global values and domain-specific values. We will go through these two parts in more detail in the following.

A revised version of the theory of trying

Two major modifications to the original model of the theory of trying (Bagozzi and Warshaw 1990) were implemented. The first modification includes the removal of expectations of success/failure and the introduction of self-efficacy in the model. One of the major differences between the theory of trying and the theory of planned behavior is that respectively, one used outcome expectations while the other used perceived behavioral control to address the problem of incomplete volitional control.

As Bagozzi (1992) argued, expectation of success/failure is an estimate of one's likelihood of succeeding or failing after one initiates trying, therefore it refers to goal attainment, while perceived behavioral control is a judgment of whether one has the ability to perform the behavior. Therefore expectation of success /failure and perceived behavioral control differ fundamentally and correspond to Bandura's (1977, 1982, 1997) distinction between outcome beliefs and self-efficacy. Outcome beliefs refer to people's beliefs about the likely effects of various actions, however, self-efficacy beliefs concern personal capacities to perform a behavior.

However, self-efficacy is still different from perceived behavioral control. Self-efficacy is a construct derived from social cognitive theory and it refers to "judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura 1982). Although Ajzen (1991) claimed that his "perceived behavior control" is most compatible with Bandura's concept of "self-efficacy", his own definition of perceived behavioral control indicates that there are differences between these two concepts. According to Ajzen, perceived behavioral control functions as both a reflection of skill and ability and a proxy measure of actual control (Manstead and Van Eekelen 1998), which implies it is two-dimensional construct. The first dimension is similar to self-efficacy and focuses on internal control; the second dimension is related to the perceived controllability over behavior and

focuses on external control. There is a growing body of evidence to support the theoretical distinction between perceived behavioral control and self-efficacy. Since our focus is on internal control, we choose self-efficacy instead of perceived behavioral control to account for the factor of personal abilities to perform a behavior in the current study.

Although both self-efficacy and outcome expectations were suggested to be included in the model, we choose to keep self-efficacy and exclude outcome expectations in our conceptual model. We consider prosumption more as a behavioral goal than an outcome goal. That is, a prosumption behavior is more like a problematic behavior for which people think impediments stand in the way. Self-efficacy is more relevant for a behavior goal than outcome expectations. An additional concern for removing outcome expectations is the methodological complexity to treat product terms (e.g. As*Es, Af*Ef) in structural equation modeling.

The second modification we make to the theory of trying is to exclude the link between intention to try and trying, because in our empirical study we only measured intentions, not the actual behavior. Therefore, we leave the intention-behavior link out of our model.

Relations between global values and domain-specific values

The second part of the conceptual model concerns the relations between global values and domain-specific values. As argued earlier, we expect that three underlying value dimensions will emerge for both global values measured by MILOV scale and domain-specific values measured by a self-developed scale. We propose that the three value dimensions of global values will influence the corresponding value dimensions of domain-specific values. For instance, the interpersonal dimension of global values will affect the interpersonal dimension of domain-specific values. Furthermore, we argue that domain-specific values will have a stronger influence on attitudes and behaviors than global values. Domain-specific values will also impact antecedents of intentions in the theory of trying (e.g., attitude, social norms, self-efficacy, and past behavior).

2.5 Cross-culture validation

Our conceptual model seems promising to investigate prosumption behavior. One unanswered question is, to what extent this framework applies to prosumption behavior across cultures? The need for cross-culture validation of consumer behavior theory has been recognized by many researchers. Albaum and Peterson (1984) criticized the tendency for consumer researchers to implicitly or explicitly assume models developed based on American consumers are universally applicable. Triandis (1982) also noted that virtually all psychological theories have been derived in Europe and the United States, which are the roots of consumer behavior theory, and very few of these psychological theories have been subjected to validation outside the western cultures.

To what extent can consumer theories widely accepted in the western cultures (e.g. individualistic culture) be applied in other cultures (e.g., collective culture)? In order to investigate the generalizability of a model, it is common to test the model for consumers from both individualistic and collective cultures. Hoststede (1980) provided four cultural dimensions to categorize cultures: masculinity, power distance, uncertainty avoidance, and individualism. The concepts of individualism and collectivism have been central to many cross-cultural studies, and they are used here to demonstrate culture difference. Members of collective cultures (e.g. China, Japan) generally emphasize interdependence and serving one's group. However, individualistic cultures (e.g., U.S., U.K.) emphasize social independence and attainment of personal goals.

For models on attitude-behavior relation, only a few cross-culture studies have examined the generalizability of the theory of reasoned action in a consumption setting (Lee and Green 1991, Bagozzi, Wong, Abe, and Bergami 2000). A recent study on fast food restaurant consumption by Bagozzi et al.(2000) found that prediction under the theory of reasoned action varied depending on the cultural orientations (independent vs. interdependent) and situational conditions (eating alone or eating with friends).

Cultural variation and situation variation

In this study, we would have liked to conduct a cross-culture test of our conceptual model. However, because the content and structure of values and value measures across cultures are still an unsolved issue in psychology, comparing the whole conceptual model across cultures

is out of the range of this study. However, we still want to take the first step to cross-culture validate one part of our conceptual model, the revised version of the theory of trying.

In addition, we test the model of theory of trying in two different situations in this study. We manipulated the degree of social pressure by varying the social context of prosumption. As the empirical setting for testing hypotheses, we chose food prosumption, more specifically, preparing a dinner at home. For each variable in the theory of trying, people were asked to express their reactions to preparing a dinner for friends and preparing a dinner for themselves. We examine how the theory of trying explains and predicts prosumption behavior in two different situational conditions.

For each situational condition, data were collected from respondents from an individual culture (e.g., Norway) and from a collective culture (e.g., China). We would like to compare the prediction of the theory of trying in these two samples from two different cultures, since a goal of this study is to investigate the generality and the difference in prediction under the theory of trying.

Chapter 3 Hypotheses

Based on the conceptual model specified in Chapter 2, three groups of hypotheses have been formulated. This chapter is organized as follows. First, the empirical context of the current study, food prosumption, is discussed in Section 3.1. Second, in Section 3.2, hypotheses on three sets of relationships within the conceptual model and underlying arguments are presented. At the end, some research questions about the influence of situation difference and culture variation on the prediction of the theory of trying are presented. Section 3.3 presents a summary of hypotheses.

3.1 Research setting

The empirical context of this study is food prosumption, more specifically, meal preparation at home. Meal preparation is a typical example of food prosumption, which is defined as "the combination of consumers' participation in the process of food preparation and their subsequent food consumption experience." Households continue to undertake such production process for various reasons such as healthiness, taste, variety, cost savings, and enjoyment. Marketers find it difficult to overtake such production functions from households, because it is hard for mass production to satisfy such diverse individual needs. A good understanding of people's prosumption behavior will have a huge impact on different sectors of the food industry. Previous studies on food related behavior found that people's frequency of preparing warm meals and their enjoyment in meal preparation related negatively to their convenience orientation. In the current study, we would like to investigate the underlying motivations behind people's food prosumption tendencies.

In this study, two scenarios describe two different situational conditions for food prosumption: prepare a dinner for friends, and prepare a dinner for oneself. The conceptual model is tested in the situation of preparing a dinner for friends. Most hypotheses are tested in this specific situation. However, we would like to compare the prediction of the theory of trying under these two situations. Therefore, the influence of situation difference on the predictability of a sub-model (e.g., a simple version of the theory of trying) can be investigated.

In addition, we conducted surveys in two countries with different cultures, Norway and China. This makes it possible for us to validate our conceptual model cross-culturally. Due to the range of this study, we also limited cross-culture validation to a sub-model, a simple version of the theory of trying.

3.2 Hypotheses

In this section, we present the hypotheses related to different parts of the conceptual model. First, we will explore the relationship among global values, domain-specific values, and attitude components. Second, hypotheses about the relationship among variables within the theory of trying will be presented. Then, relationships between domain-specific values and variables within the theory of trying will be discussed. At the end, open-ended research questions about the influences of situation difference and cultural variation on the prediction of the theory of trying are also presented.

3.2.1 Hypotheses on relationships among global values, domain-specific values, and attitude components

Relationships between global values and domain-specific values

As discussed in the theory chapter, we expected that both global values and domain-specific values would show an underlying structure with three dimensions. They are labeled as the interpersonal, personal and fun dimensions, respectively for both global values and domain-specific values. In this section, we discuss the relationship between these two sets of values based on the three dimensions.

In our empirical setting, domain-specific values in food prosumption are defined as "values people perceive to be acquired through their food prosumption experiences". For instance, a domain-specific value of "fun and enjoyment in food prosumption" reflects that people perceive they acquire fun and enjoyment through their participation in the food prosumption process.

According to Vinson (1977), global values exert a direct influence on domain-specific values. The influence should theoretically flow from abstract global-values to more peripherally

located domain-specific values. That is, the three dimensions of global values will impact their corresponding dimensions of domain-specific values. For example, the interpersonal dimension of global values will influence the interpersonal dimension of domain-specific values in food prosumption.

However, there might be variations among different dimensions on how strongly global values can influence domain-specific values. For instance, the global value of "close relationship with others" belongs to the interpersonal dimension. This value is more likely to generalize to specific domains. Or, it is more likely to influence its corresponding domain-specific value in a certain domain such as food prosumption. Those who consider "close relationship with others" as important are also likely to put more weight on close relationship in food prosumption. Nevertheless, it is a different story for the global value of "fun and enjoyment". Those who rate "fun and enjoyment" highly in general, may not consider it fun and enjoyable to prepare food. So we would suggest different dimensions of global values vary on how they influence their corresponding domain-specific values in food prosumption.

Three dimensions of global values and domain-specific values

We argue that the interpersonal dimension of global values is most likely to generalize to specific domains. Values such as sense of belonging or warm relationship with others are social values. Since we live in a social network as human beings, these social values will guide our behaviors across different domains. The interpersonal dimension of global values is also most likely to influence domain-specific values in food prosumption. For example, those who highly value "warm relationship with others" in general are also more likely to consider "serve good food to my friends" as important in food prosumption. Therefore, we argue that the interpersonal dimension of global values will have a strong impact on domain-specific values in food prosumption.

H1: The interpersonal dimension of global values has strong influence on the interpersonal dimension of domain-specific values in food prosumption.

The personal dimension of global values contains values such as self-respect and a sense of accomplishment. These values focus more on one's self-concept. For instance, self-respect is very central to one's self-concept. A person usually has several domains that are considered important to their self-concept. Food prosumption could be an important domain for some

groups of people, such as cooks or hobby cooks, or those who are in charge of the food preparation in households. For those people, the global value of self-respect could have an impact on their corresponding domain-specific values in food prosumption. Moreover, people feel a sense of accomplishment by participating in a prosumption process, because a prosumption process includes a production process by definition. People get a feeling of mastery through participation in such a production process (London et al. 1977). However, the influence of the global value of accomplishment on domain-specific values still depends on a person's perceived relevance of that domain. For example, those who rate accomplishment high in general may not perceive meaningful values from food prosumption, if they consider food prosumption is not important for them. So, it is possible that the personal dimension of global values has an important impact on domain-specific values, but the impact will depend on an individual's perceived importance of that domain to their self-concept. Therefore, it is difficult to argue for a strong impact of the personal dimension of global values on the personal dimension of domain-specific values in food prosumption.

Compared to the other two dimensions, the fun dimension of global values reflects much more individual differences. For instance, one person may perceive fun from domain A, but not from domain B, and another person could do the opposite. Fun values perceived in a specific domain relate strongly to a person's interests or experiences in that domain. Similarly, it is difficult to argue for a strong influence of the fun dimension of global values on the fun dimension of domain-specific values in food prosumption. For the personal and fun dimensions, we will not form specific hypothesis. Rather, we have left the possibility open and explore these relationships.

Global values and attitudes

Global values guide attitude and behavior across different domains and varied situations. As Williams claimed (1979), even in a specific situation, actual selection of behavior results from concrete motivations partly determined by prior beliefs and values of the actor. Kahle et al's research on value→attitudes→behavior hierarchy provides strong evidence for the impact of global values on attitudes (Kahle 1980, 1983; Kahle et al. 1980, Beaty et al. 1985, Homer and Kahle 1988). Therefore, we argue that the global values alone will influence specific attitudes in food prosumption if domain-specific values are not in the picture. So, the following is proposed:

H2a: The three dimensions in global values will have positive influences on As.

H2b: The three dimensions in global values will have negative influences on Af.

H2c: The three dimensions in global values will have positive influences on Ap.

Comparison of the impact of global values and domain-specific values on attitudes

Both global values and domain-specific values could influence attitude. In a certain domain, domain-specific values bridge the gap between global values and attitudes and behavior in that domain. The influences should flow from the global values to domain-specific values to attitude. We argue that domain-specific values will explain more variance in attitudes than global values do. First, domain-specific values reflect the specific characteristics of a certain domain (e.g., food prosumption). Second, narrowing down the construct to a specific domain may lead to a closer correspondence between constructs and behaviors. Therefore the scale's predictability may increase. Therefore, we propose the following.

H3a: Domain-specific-values will explain more variance in attitude components toward preparing a dinner for friends than global values do.

Furthermore, it is possible that domain-specific values may mediate the influence of global values on attitudes and behavior.

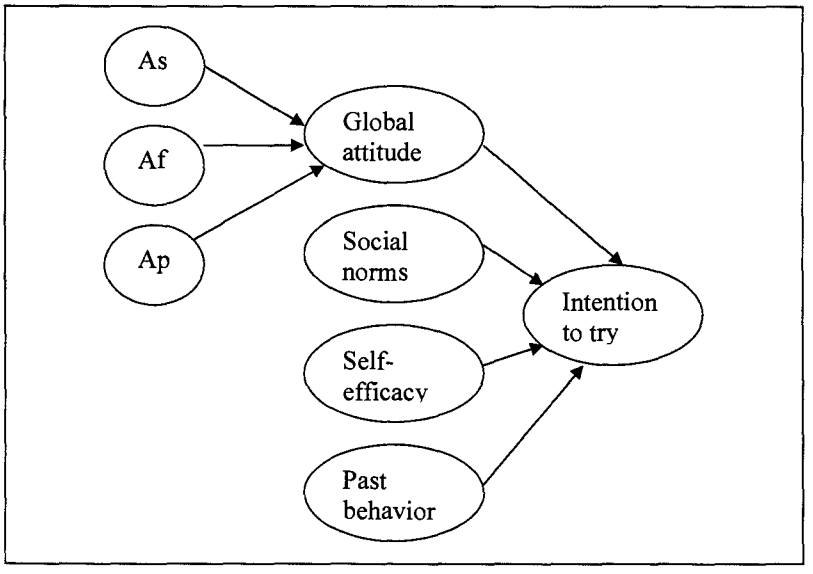
H3b: Domain-specific-values will mediate the influence of global values on attitude components toward preparing a dinner for friends.

3.2.2 Hypotheses within the theory of trying

After a discussion about relationships among two sets of values and attitude components, we turn to the relationships among variables within the revised version of the theory of trying. We present and argue for hypotheses about relations between attitude components and the global attitude, and about the relations between different antecedents (e.g., the global attitude, social norms, self-efficacy, and past behavior) and intentions, as shown in Figure 3.1.

Attitude and attitude components

The theory behind the effects of As, Af, and Ap rests on a dynamic conceptualization of self-regulation in response to anticipated feedback (Bagozzi 1992; Carver and Scheier 1998). A decision maker is hypothesized to consider a goal, appraise the consequences of achieving and not achieving the goal, as well as goal pursuit, and experience corresponding positive and



As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

Figure 3.1: The revised model of the theory of trying

negative affect (Taylor, Bagozzi and Gaither, 2001). The processes are similar to counterfactual thinking, which Gleicher et al. (1995, p.294) term "prefactual" to stress the anticipated, forward looking aspects of the activities. Taylor et al. (2001) propose that people anticipate the implications of success/failure and the process of performing a behavior by forming prefactual As, Af, and Ap. They assumed that these prefactual attitudes have motivational implications. That is, anticipated negative outcomes and experiences are punishing, so people should be motivated to avoid them; positive outcomes and experiences are rewarding, so people should be motivated to approach them. As evidence for construct validity, Bagozzi and Warshaw (1990) found convergent and discriminate validity for measurements of the three attitude components by studying losing weight behavior.

Following the abovementioned argument, we propose the prefactual As, Af, and Ap people formed will affect their global attitude toward food prosumption. The higher the As, that is, the higher people evaluate the positive outcomes of succeeding in preparing a dinner for friends, the more likely they will have positive global attitudes. On the contrary, the more they are afraid of the negative outcomes of failing in preparing a dinner for friends, the more

likely they will have negative global attitudes. Moreover, the more enjoyment they anticipated from the food prosumption process itself regardless of the outcomes, the more likely they will hold positive global attitudes. Therefore, we propose the following:

H4a: Attitude toward trying to prepare a dinner for friends and succeeding (As) will have positive influences on the global attitude toward preparing a dinner for friends (Ag).

H4b: Attitude toward the food prosumption process (Ap) will have positive influences on the global attitude (Ag).

H4c: Attitude toward trying to prepare a dinner for friends and failing (Af) will have a negative influence on the global attitude (Ag).

As argued in theories on attitude-behavior relation, positive attitudes toward a behavior will lead to higher behavioral intention; negative attitude will lead to lower intention. So we argue for the positive influence of the global attitude toward preparing a dinner for friends on behavioral intention.

H4d: The global attitude toward preparing a dinner for friends (Ag) will have positive influences on intention to prepare a dinner for friends.

Social norms

Social norms refer to "a person's perception that important others desire the performance or non-performance of a specific behavior" (Ajzen and Fishbein 1980). Researchers recognize that there are some situations that are simply not under the attitudinal control of the individual, instead the expectations of relevant others are a major factor in the ultimate behavioral performance (Lutz 1991). Therefore, social norms have been included in attitude-behavior-relation models to account for social influences on behavior.

Social norms are assumed to be a function of normative beliefs, which refer to a person's beliefs that specific individuals or groups approve or disapprove of performing a behavior. These individuals and groups are known as referents. For many behaviors, the important referents include a person's parents, spouse, close friends, co-workers and even relevant experts (Ajzen, 1988). Generally, people who believe that most referents think they should perform the behavior will perceive social pressure to do so. Consistent with the theory of trying, we also propose social norms toward preparing a dinner for friends will affect people's intention to do so.

H4e: Social norms toward preparing a dinner for friends will have a positive influence on people's intention to do so.

Self-efficacy

Different constructs have been introduced into attitude-behavior-relation models to predict behaviors that are not under volitional control. The theory of planned behavior used perceived behavioral control (e.g. "the person's beliefs as to how easy or difficult performance of the behavior is likely to be") (Ajzen 1985). The theory of trying included outcome expectations (e.g., the person's subjective assessment of the probability of success and the probability of failure). (Bagozzi and Warshaw 1990) As discussed in the theory chapter, the construct of self-efficacy is introduced in our revised model of the theory trying to address the problem of incomplete volitional control. Self-efficacy is "concerned with judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura 1982; p.122).

Self-efficacy beliefs can influence choice of activities, preparation of an activity, effort expended during performance, and thought patterns and emotional reactions (Bandura 1982, 1991). The investigations of Bandura and his associates have shown that people's behavior is strongly influenced by their confidence in their ability to perform them. Studies on perceived behavioral control (e.g., Madden et al. 1992) also show a consistent, strong relationship between the self-efficacy dimension and intentions. So, we propose a positive influence of self-efficacy on behavioral intentions.

H4f: Self-efficacy toward preparing a dinner for friends will have a positive influence on people's intention to do so.

Past behavior

A final distinction between the theory of trying and other attitude-behavior-relation theories is its inclusion of the effect of past behavior. Researchers have found that past behavior contributes to increase the explained variance in intentions and behavior (Ajzen and Madden 1986, Bagozzi 1981, Bentler and Speckart 1979, 1981, Charng, Piliavin and Callero 1988) and makes a substantive contribution to understanding future behavior. One possible reason is that habits may influence behavior directly, without impacting intention formation (Bagozzi

and Warshaw 1992, Ouellette and Wood 1998). Another possibility is that past behavior may influence the antecedent variables such as perceived behavioral control (Ajzen, 1991) or even attitude (Ouellette and Wood 1998). The theory of trying separates the effect of past behavior into two variables, frequency and recency of past behavior. In the current study, we consider the effect of frequency and of recency as two dimensions of the effect of past behavior on intentions. We propose the following.

H4g: Past behavior will have a positive influence on people's intention to prepare a dinner for friends.

3.2.3 The relationships between domain-specific values and the theory of trying

We have discussed the relationships among global values, domain-specific values, attitudes, and the relationships among variables in theory of trying separately. In this section, we would like to address the connection between these two parts of models. Specifically, we will discuss the relationships between domain-specific values in food prosumption and antecedents of intentions in the theory of trying such as attitudes, social norms, self-efficacy and past behavior.

Domain-specific values and attitudes

In our revised model of the theory of trying, we have one global attitude and three attitude components. We argue that all three dimensions of domain-specific values in food prosumption will influence people's attitudes toward preparing a dinner for friends. The interpersonal dimension is relevant because the situation of preparing a dinner for friends is in a social context. Social value, such as warm relationship with others in food prosumption, will certainly influence people's attitudes toward preparing a dinner for friends. Participation in food prosumption will give people a feeling of mastery, or increase their self-respect if they consider that the domain of food prosumption is important to their self-concept. In this sense, the personal dimension will also play a role in determining people's attitudes. Moreover, the fun and enjoyment that people perceive from the food prosumption experiences will also positively affect their attitudes. Therefore, for the three different attitude components (As, Af and Ap), we argue that the three dimensions of domain-specific values will have a positive influence on As and Ap, but negative impact on Af.

H5a: The three dimensions in domain-specific values will have positive influences on As.

H5b: The three dimensions in domain-specific values will have negative influences on Af.

H5c: The three dimensions in domain-specific values will have positive influences on Ap.

However, different values dimension may have different degrees of impact on different attitude components. As and Af address the anticipated consequences of succeeding and failing in performing a behavior. We argue that evaluations of these behavioral consequences will relate more to the interpersonal and personal dimensions of domain-specific values, since these two dimensions address higher-level goals that food prosumption behavior may serve.

H5d: The interpersonal and personal dimensions will have stronger influence on As than the fun dimension.

H5e: The interpersonal and personal dimensions will have stronger influence on Af than other two dimensions.

On the other hand, Ap reflects how enjoyable the food prosumption process itself is, and it is independent of the value of goal achievement. So, Ap should relate more strongly to the fun dimension than the other two dimensions.

H5f: The fun dimension will have stronger influence on Ap than the other two dimensions.

We also argue that the three attitude components will mediate the influence of domain-specific values on the global attitude.

H5g: As, Af, Ap will mediate the impacts of domain-specific values in food prosumption on Ag.

Relationships between domain-specific values and other antecedents of intention

In the theory of trying, social norms, self-efficacy and past behavior are also antecedents for intentions. Since social norms account for the social pressure to perform a behavior, the behavior should relate most strongly to those values that lead to a greater desire to be obedient to and to comply with others. Such values belong to the interpersonal dimension of domain-specific values. So, we propose:

H6a: The interpersonal dimension in domain-specific values will have stronger influence on social norms than the other two dimensions.

For self-efficacy toward preparing a dinner for friends, we argue that all three dimensions in domain-specific values will affect self-efficacy. As long as people perceive values from food prosumption (e.g., social values, personal values or fun/enjoyment), the more likely they have engaged in food prosumption frequently, and the more likely they have increased their competence and ability assessment. The fun dimension of domain-specific values especially will have a stronger impact on self-efficacy than the other two dimensions, as fun and interest often are the best driving power to perform a behavior. Therefore, we propose the following:

H6b: The three dimensions in domain-specific values will have positive influences on self-efficacy.

H6c: The fun dimension will have stronger influence on self-efficacy than the other two dimensions.

Finally, we also predict a positive influence of all three value dimensions on past behavior in food prosumption. The higher people evaluate the values associated with food prosumption, the more likely they have performed it frequently and recently in the past.

H6d: The three dimensions in domain-specific values will have positive effect on past experiences of preparing a dinner for friends.

3.2.4 Situation difference and culture variation

All the aforementioned hypotheses have been formulated in the situation of preparing a dinner for friends. In this section, we consider another situation, preparing a dinner for oneself. The theory of trying may have different prediction in this new situation. We would like to address the situation difference by applying a simple version of the theory of trying. By a simple version, we mean that the model only includes the global attitude but excludes the three attitude components. In order to see the effect of situation differences, we will test the theory of trying in both situations and attempt to answer the following question:

Q1: Does the theory of trying predict differently in the two different situations? If so, what is the difference?

Since we collected data from a Norwegian sample and a Chinese sample for the two situations, it is possible for us to cross-culturally validate the theory of trying for both situations. We would like to examine the generalizability of the theory of trying and try to answer the following questions:

Q2: In the situation of preparing a dinner for friends, does the theory of trying predict differently for the Norwegian sample and for the Chinese sample?

Q3: In the situation of preparing a dinner for oneself, does the theory of trying predict differently for the Norwegian sample and for the Chinese sample?

3.3 Summary of hypothesis

Hypotheses on relationships among global values, domain-specific values, and attitudes

H1: The interpersonal dimension of global values has strong influence on the interpersonal dimension of domain-specific values in food prosumption.

H2a: The three dimensions in global values will have positive influences on As.
H2b: The three dimensions in global values will have negative influences on Af.
H2c: The three dimensions in global values will have positive influences on Ap.
H3a: Domain-specific-values will have stronger influences on attitude components toward prepare a dinner for friends than global values do.
H3b: Domain-specific-values will mediate the influence of global values on attitude components toward prepare a dinner for friends.

Hypotheses on relationships among variables within the theory of trying

H4a: Attitude toward trying to prepare a dinner for friends and succeeding (As) will have positive influences on global attitude toward preparing a dinner for friends (Ag).
H4b: Attitude toward the food prosumption process (Ap) will have positive influences on global attitude (Ag).
H4c: Attitude toward trying to prepare a dinner for friends and failing (Af) will have a negative influence on global attitude (Ag).
H4d: The global attitude toward preparing a dinner for friends (Ag) will have positive influences on intention to prepare a dinner for friends.
H4e: Social norms toward preparing a dinner for friends will have a positive influence on people's intention to do so.
H4f: Self-efficacy toward preparing a dinner for friends will have a positive influence on people's intention to do so.
H4g: Past behavior will have a positive influence on people's intention to prepare a dinner for friends.

Hypotheses on relationships between domain-specific values and the theory of trying

H5a: The three dimensions in domain-specific values will have positive influences on As.
H5b: The three dimensions in domain-specific values will have negative influences on Af.
H5c: The three dimensions in domain-specific values will have positive influences on Ap.
H5d: The interpersonal and personal dimensions will have stronger influences on As than the fun dimension.
H5e: The interpersonal and personal dimension will have stronger influence on Af than other two dimensions.
H5f: The fun dimension will have stronger influence on Ap than the other two dimensions.
H5g: As, Af, Ap will mediate the impacts of domain-specific values in food prosumption on Ag.
H6a: The interpersonal dimension in domain-specific values will have stronger influence on social norms than the other two dimensions.
H6b: The three dimensions in domain-specific values will have positive influences on self-efficacy.
H6c: The fun dimension will have stronger influence on self-efficacy than the other two dimensions.
H6d: The three dimensions in domain-specific values will have positive effect on past experiences of preparing a dinner for friends.

Chapter 4 Methodology

This chapter contains the consideration and choice of methodology to conduct the empirical study. It is organized as follows. Section 4.1 includes general discussions about the choice of survey design. Section 4.2 discusses the construction and translation of the questionnaire. Section 4.3 reports several aspects of the measurement of independent and dependent variables in our conceptual model. Section 4.4 addresses issues of data collection.

4.1 Survey design

Research design involves choices relating to the setting, sample, and operationalization of variables. Research design can be divided into survey design where all variables are continuous and measured, and experimental designs where at least one independent variable is manipulated and categorical in nature (Viswanathan 2005). Surveys use a correlational approach and measure independent and dependent variables. On the other hand, the defining characteristics of pure experiments include the manipulation of an independent variable to study its effects on the dependent variables and random assignment of respondents to treatment versus control conditions.

We chose to conduct a survey study instead of an experiment for the following reasons. First, the major independent variables in our study are values, which are not subjected to manipulation. These values, either global values or domain-specific values, are enduring beliefs people have through life experiences. Since values are formed over a relatively long period of time, it is difficult to manipulate them in an experiment design. Second, experimental design is neither suitable nor feasible to test our comprehensive model. Although experimental design is excellent for testing causal influence from a limited number of independent variables to dependent variables, it is difficult to test the complex relationships among many variables at the same time. We consider a survey design to be a more suitable design for studying the complex relationships between two sets of values and variables within the theory of trying in our conceptual model.

4.2 Questionnaire design

The process of questionnaire design and development

"Questionnaire design is part art and part science, with the balance tipped toward the former" (Bagozzi 1994). As he suggested, it is important to view questionnaire design and development as a process. Five steps are necessary for the successful design and development of questionnaires (Bagozzi, 1994). We basically followed these steps to design our questionnaire for the current study.

The first step is to determine what is to be measured. That is, one needs to identify the phenomenon one wants to explain and consider its antecedents and consequences. At this stage, qualitative research plays an important role. In the current study, focus group discussion and intensive research of the literature were used to identify the content of domain-specific values in food prosumption. For global values and variables in the theory of trying, intensive literature research was conducted to get the appropriate measures.

The second step is to prepare a draft of a questionnaire. Researchers need to decide the wording of items, the format of questions and response alternatives, the number of items and response alternatives per item, and the general organization of the questionnaire. After this step, a formal critical review should be conducted by the researchers and a group of experts. A pilot test of the questionnaire is also necessary. In this study, our questionnaire has been critically reviewed by several doctoral students and marketing faculty members. A pilot test of the questionnaire was also conducted to check the wording, questionnaire length, and response alternatives.

The fourth step is to perform a pretest on a representative sample. In the current study, only parts of the whole questionnaire were pretested because of the length of the total questionnaire. For instance, the measurement scale of global values was pre-tested in a student sample (N=184) in a Norwegian business school; the measurement scale of domain-specific values in food prosumption was pre-tested in a convenient adult sample from the university community (N=113). Finally, the fifth step is to revise the questionnaire and implement the main study. Based on the results of pretests, we revised the scale of domain-specific values before conducting the main survey.

The scenario technique

Scenarios were used in our questionnaire to describe the situations for food prosumption. For example, the scenario for preparing a dinner for friends is the following:

> Suppose that you are going to invite some good friends to visit you this weekend. You need to serve a meal for 6-8 persons. Please describe what you think is important when you prepare a dinner for friends in this situation.

Respondents were asked to read these scenarios and answer the questions that follow. The validity of scenarios and the similarity of results between laboratory research and role-playing studies have been well-documented (Bem, 1967). The scenario method is advocated by many researchers and has been applied in consumer behavior, in industrial buying, and in retailing (e.g., Surprenant and Solomon, 1987). It is particularly successful as a research tool when subjects are required to play themselves rather than projecting themselves into unfamiliar roles (Eroglu, 1987). In this study, respondents "played" themselves in described situations.

Based on previous research on scenarios (Eroglu, 1987), certain steps were taken to avoid socially desirable responses. For example, respondents were instructed to "read the following situation carefully" and that "it is important to imagine yourself in the situation described and then answer the questions that follow".

Translation of questionnaire

All measurement scales in our study were initially developed in English. In order to conduct the survey both in Norway and in China, a translation of the questionnaire was necessary. A back translation procedure was employed, which is commonly used in cross-cultural research (Brislin, 1976; Cavusgil and Das, 1997).

In a back translation a researcher prepares the measurement instrument in one language and hands it over to a bilingual who translates it into another language. Afterwards, a second bilingual translates the instrument back into the original language. As a result the researcher possesses two versions of the instrument in the original language and can evaluate the quality of the translation. Moreover, the back translation technique has the benefit of "decentering", i.e. the process "...by which one set of materials is not translated into another language with

as little change as possible. Rather, the material in one language is changed so that there will be a smooth, natural-sounding version in the second language" (Brislin 1976:222). As a result, the idiosyncrasies of each language add to the final version of the measurement instrument. Furthermore, quality assessment of the translated version is enhanced if the researcher knows the target language (Brislin, 1976).

The translation of my instrument from English to Norwegian was carried out by two bilingual Norwegian and English speaking colleagues. In addition, I know the target language Norwegian and could therefore make a proper judgment for the final Norwegian version of the questionnaire (also with help from native Norwegian speaking colleagues).

With respect to translation of the questionnaire from English to Chinese, a similar procedure was followed. The questionnaire was back translated by two bilingual Chinese and English speaking students. Moreover, I am able to make a proper judgment for the Chinese version of the questionnaire since Chinese is my native language.

4.3 Measurement

The majority of constructs or phenomena investigated in the social sciences are not subject to direct measurement or observation. Most of the constructs are latent and must be inferred indirectly from other indicators (Kumar, Stern and Anderson 1993, Troye 1994). The process of measurement or operationalization involves "rules for assigning numbers to objects to represent quantities of attributes" (Churchill 1979:65), that is, it is the attributes of objects that are measured and not the objects themselves. Reliability and construct validity are two important issues in measurement.

Reliability

Reliability refers to the degree of similarity of different attempts to measure the same thing (internal consistency reliability) or the stability of measures of the same thing taken over time (test-retest reliability). Reliability is very important in measurement for the following

reasons: 1) obtaining more accurate forecasts, 2) identifying valid causes and their relative influences, and 3) designing questionnaires.

There are two types of reliability with which we are generally concerned: item reliability and composite reliability. They are defined as the following. For a latent variable ξ, several items X_i measure it with factor loading λ_i and error variance δ_i.: $X_i = \lambda_i\xi + \delta_i$. The formula to calculate item reliability is:

$$\rho_{ii} = \frac{\lambda_i^2}{\sigma_{ii}} = \frac{\lambda_i^2}{\lambda_i^2 + \theta_{ii}} = 1 - \frac{\theta_{ii}}{\lambda_i^2 + \theta_{ii}}$$

in which λ_i refers to the *i*th factor loading, σ_{ii} is the total variance for the *i*th measure of ξ, and θ_{ii} is the error variance for the *i*th measure of ξ. Within the context of a confirmatory factor analysis model in LISREL, item reliability of an indicator is given by the square of the standardized factor loadings.

The formula to calculate composite reliability is:

$$\rho_c = \frac{(\sum\lambda_i)^2}{(\sum\lambda_i)^2 + \sum\theta_{ii}}$$

in which λ_i refers to the *i*th factor loading, and θ_{ii} is the error variance for the *i*th measure of ξ. In LISREL, values of composite reliability should exceed 0.6 in order to be satisfactory.

Construct validity

Construct validity refers to the degree to which an operationaliztion measures the concepts that it purports to measure (Cook and Campbell 1979, Reve 1985, Troye 1994). There are three parts of construct validity: convergent validity, discriminant validity and nomological validity. Convergent validity is the degree to which two or more attempts to measure the same concept are in agreement. Discriminant validity is the degree to which measures of different concepts can be distinguished from each other. Finally, nomological validity is the degree to which predictions containing measures of a focal variable are confirmed. Convergent validity and discriminant validity will be discussed in more detail in the next chapter on measurement models.

4.3.1 Measurement of independent variables

The major independent variables in the current study are values, both global values and domain-specific values in food prosumption. Global values are measured by the Multiple Item adaptation of List of Values (MILOV) (Herche 1994). Domain-specific values in food prosumption are measured by a self-developed scale.

4.3.1.1 The MILOV scale for global values

As addressed earlier, researchers typically use three approaches to measure values: the Rokeach Values Survey (Rokeach 1969, 1973), Values and life styles (Mitchell 1983), and the List of Values (Kahle 1983). The List of Values scale has been claimed to be the best (Beattey et al. 1985, Kahle et al. 1986). However, the major weakness of the LOV scale is its usage of single-item measures. According to Churchill (1979), single-item measures: 1) tend to have low correlations with their associated constructs, 2) tend to categorize people into a small number of groups, and 3) typically contain a large amount of measurement error. In addition, single-item measures do not allow reliability assessment (Nunnally 1978) and have been criticized for providing minimal evidence of psychometric quality in general (Jacoby 1978).

In order to overcome the problems with single-item measures, Herche (1994) extended Kahle's single-item scale to a multi-item scale, MILOV. MILOV includes 44 items, measuring 9 different values. Each item was administrated in a nine-point Likert scale format. Compared to the single-item LOV, MILOV requires more time and effort to complete. However, the benefits of being able to assess reliability and convergent validity as well as the improvements in predictability over the LOV more than offset this inconvenience and justify the use of MILOV (Herche 1994). Therefore, we adopted the MILOV scale to measure global values in the current study. Each item was measured by a seven-point Likert scale, consistent with measures of other variables.

Correlation among MILOV items and LOV items

Since the MILOV scale has only been tested in Herche's study (1994), we decided to pretest both the MILOV scale and the LOV scale in a student sample from a major Norwegian business school. The sample size was 184. The items in both scales were formulated as 7-

point Likert scales, with only the extremes labeled. Intentions to undertake six prosumption activities were measured as dependent variables.

Correlations between summated scores for value-dimensions in MILOV and their corresponding single-item measures in LOV are presented in Table 4.1. Consistent with Herche's results (1994), summated scores of being well-respected, fulfillment, and sense of belonging in MILOV had low correlations with their corresponding LOV items; however, summated scores of other MILOV items correlated well with their corresponding LOV single items. The correlations between individual items in each value-dimension of MILOV and their corresponding single LOV item showed a similar pattern.

Table 4.1: Correlations among LOV items and MILOV items

LOV single item	MILOV summated items	Item1	Item2	Itme3	Iitem4	Item5	Item6	Item7	Item8
Fun	.53**	.58**	.14	.68**	.27**				
Relation	.55**	.18**	.42**	.25**	.49**	.49**	.31**		
Excitement	.69**	.54**	.56**	.24**	.71**				
Safety	.61**	.12	.70**	.54**	.28**				
Belonging	**.31****	.10	.31**	.19**	.27**				
Be-respected	**.22****	.11	.16*	.06	.26*				
Fulfillment	**.32****	.30**	.16**	.29**	.04	.24**			
Accomplishment	.55**	.42**	.35**	.28**	.40**	.37**			
Self-respect	.67**	.33*	.50**	.51**	.45**	.47**	.29**	.41**	.62**

** P<0.01

Comparison of predictability of MILOV and LOV scales

The ultimate practical value of a scale rests in the ability to predict behavior (Wells 1993). An assessment of the concurrent validity of the measures was conducted by comparing the MILOV and LOV using a series of 6 different prosumption behaviors. The independent variables for the MILOV models were obtained by summing all of the associated items for each value dimension. Our results are consistent with Herche's study (1994) for 59 diverse behaviors and revealed evidence of a substantial improvement in the ability to predict prosumption behavior using MILOV. As shown in Table 4.2, of the 6 regression models using LOV as predictors, only 2 could explain significant variation in behavior, compared to 3

using MILOV as predictors. Furthermore, MILOV performed better in the 3 significant models. This gave us the confidence to apply MILOV to measure global values in our study.

Table 4.2: Comparison of predicting ability of LOV scale and MILOV scale

Prosumption behavior	LOV as significant predictor	Adjusted R2	MILOV as significant predictor	Adjusted R2
Book travel online	No	-.02	No	-.033
Assemble bookshelf	No	.006	Yes, p= .01	**.076**
Prepare meal for oneself	Yes, p=.06	**.042**	Yes, p= .02	**.065**
Pay bill online	No	.021	No	.003
Scan groceries by oneself	No	.005	No	.020
Prepare meal for friends	Yes, p=.06	**.041**	Yes, p= .003	**.096**

4.3.1.2 Measures of domain-specific values in food prosumption

Domain-specific values in food prosumption were measured by a self-developed scale. The scale was developed from exploratory research with items derived from a focus-group interview and the previous literature.

Item generation

Through a review of a large base of relevant literature, preliminary scale items were identified. Focus group interviews were then conducted to fully specify the domain-specific values content area. Focus group members consisted of a convenience sample from a university community. The group consisted of one male and five female respondents whose ages ranged from 35 to 58 years and who were mainly responsible for meal preparation in their households.

Focus group sessions began with participants listing activities they would do in the process of preparing a meal for friends. A moderator probed respondents with respect to what they would do if they invited some guests home and needed to serve food to the guests, providing the alternative of catering. Noting that several respondents specified they would prepare meals at home, the moderator asked subjects to explain why they chose to make food by themselves

and then introduced personal values as an important explanatory factor. After some discussion, the moderator asked respondents what each global value meant to them in the context of food consumption. In all, 44 items were generated from the literature review and focus group discussion. These items were retained for psychometric analysis.

Initial scale development

Initial quantitative analyses were conducted to purify the measures and provide an initial examination of the scale's psychometric properties. All items were initially developed in English and translated into Norwegian by employing a back translation procedure. The questionnaire was administrated to a convenience sample of respondents from a major city in Norway. Only respondents who were mainly responsible for meal preparation in their household were asked to complete the questionnaire. All items were formulated as 7-point Likert scales, with only the extremes labeled. In total, 113 completed and valid questionnaires were used for the analyses.

Revision of domain-specific values scale

The forty-four items were analyzed with an exploratory factor analysis to examine their dimensionality. The Maximum likelihood extraction solution was rotated using an oblique technique to examine the factor structure closely. The first four factors accounted for 44% of the total variance, while no additional factor accounted for more than 6%. Remaining items failed to load highly on the first four factors, and remaining factors failed to account for the substantial variance in the data.

In the analysis process, we found that 12 of the 44 items were still phrased in a general term. That is, these items were not operationalized in the specific domain of food prosumption. We suspected that this might have had some impact on the factor pattern. Six of these 12 items are items in "warm relationship with others" and "sense of belonging". So these 12 items were rephrased to be more specific to food preparation. Afterwards, 15 items were removed from the scale: 3 due to repetition, another 4 for the ambiguous phrasing, 2 items about reading magazines and watching TV programs on cooking were deleted, 3 items on time expenditure were removed, and the last 3 items were deleted due to low loadings on their corresponding factors. At the end, a revised 29-item scale was tested in the main test.

4.3.2 Measurement of dependent variables

Two scenarios are used in the questionnaire to describe two different situations for food prosumption, preparing a dinner for friends and preparing a meal for oneself. The two scenarios are as the following:

> Suppose that you are alone at home one day. Please describe how you feel when you prepare a meal for yourself.
>
> Suppose that you are going to invite some good friends to visit you this weekend. You need to serve a meal for 6-8 persons. Please describe what you think is important when you prepare a dinner for friends in this situation.

The dependent variables in the current study are variables in the theory of trying, such as the global attitude (Ag) and three attitude components toward preparing a dinner (As, Af, and Ap), social norms, self-efficacy toward preparing a dinner, past behavior, and intention to prepare a dinner. They were measured for both situations of food prosumption.

In the current study, we adopted operationalization for these variables from Bagozzi and Warshaw's original study (1990). Most items (except measures for attitude variables) were measured by seven-point Likert scales. Beneath each response category was: "1 = totally disagree", "2 = quite disagree", "3 = slightly disagree", "4 = neither disagree nor agree", "5 = slightly agree", "6 = quite agree", and "7 = totally agree". Below, we present the operationalizations for dependent variables in the situation of preparing a dinner for friends. A similar operationalization was employed for variables in the situation of preparing a dinner for oneself, by using "for myself" instead of "for my friends". The latter is not presented here but included in the questionnaire in Appendix A.

Global attitude toward prosumption (Ag) was measured by "My trying to prepare a dinner for my friends would make me feel..." Three seven-point (from 1 to 7) scales followed: unpleasant /pleasant, disgusting/enjoyable, dissatisfying /satisfying.

Attitude toward success (As) was measured by asking subjects to indicate how unpleasant/pleasant and how disgusting/enjoyable "My trying and succeeding at preparing a dinner for my friends by myself would make me feel..." A seven-point scale was employed.

Attitude toward failure (Af) Respondents expressed on seven-point scales how unpleasant/pleasant and how disgusting/enjoyable "My trying and failing at preparing a dinner for my friends by myself would make me feel..." A seven-point scale was employed.

Attitude toward process (Ap) was measured by asking subjects to indicate how unpleasant/pleasant and how disgusting/enjoyable "No matter what is the result, my trying to prepare a dinner for my friends by myself would make me feel..." A seven-point scale was employed.

Social norms toward food prosumption(SN) was measured with the following two items "My family thinks that I should prepare a dinner for my friends" and "Most people who are important in my life would like me to prepare a dinner for my friends". A seven-point Likert agreement scale was employed. Beneath each response category was "1 = totally disagree", "2 = quite disagree", "3 = slightly disagree", "4 = neither disagree nor agree", "5 = slightly agree", "6 = quite agree", and "7 = totally agree". The same response categories were used for measurement items of self-efficacy, past behavior and intention to prosume.

Self-efficacy toward food prosumption

The traditional measurement of self-efficacy (Bandura 1984, 1986) requires that an individual respond dichotomously (yes or no) to whether he or she is capable of performing at several specific levels on a specific task (the sum of positive response is the magnitude of self-efficacy). For each affirmative response, confidence is then rated on a scale that ranges from 1 or 10 (quite uncertain) to 100 (quite certain) at 1 or 10-point intervals, respectively (Gist 1989). The sum of confidence rating is the strength of self-efficacy. A variation is that strength may be measured by eliciting and summing the confidence ratings for all levels (as opposed to only those for which there is an affirmative response) (Locke et al. 1984). Likert-type scales have also been used which simply ask how well the person thinks he or she can do the task: that scale score is then correlated with performance (Bandura 1977, Hill et al. 1987, Schunk 1983, 1984).

In the current study, we adopted Likert-type scales to measure self-efficacy toward food prosumption. Self-efficacy was measured by the following three items: "I feel capable of preparing a dinner for my friends", "I know what to do when I prepare a dinner for my friends", and "I feel that I possess the necessary skills to prepare a dinner for my friends". A seven-point Likert agreement scale was employed.

Past behavior was measured with two items. The first item measured frequency of past behavior, "I frequently prepare dinner by myself." The second item measured recency of past behavior, "I have recently prepared a dinner for my friends." A seven-point scale was employed for both items.

Intention to prosume was measured by the following item: "I intend to prepare a dinner for my friends by myself". A seven-point Likert agreement scale was employed.

4.4 Data collection

Data were collected both in Norway and in China. The target population of this study was ordinary household members who are in charge of food preparation at home, since it is difficult for people to rate their likelihood of preparing a dinner if they don't cook at all. Below, we briefly describe the process of data collection in Norway. A similar process was employed for data collection in China.

Sampling

A questionnaire was administered to subjects chosen from a population of a major Norwegian city. The city was first subdivided into 24 geographical regions as in the city telephone directory. Four of these regions were randomly selected. In each geographical region, 100 questionnaires were distributed door to door to households by one assistant. The reason for using such a sampling procedure was to reduce the traveling cost of the assistants. Four assistants distributed the questionnaires. Prior to going into the field, they participated in training sessions conducted by the author.

Data collection procedure

Respondents were contacted in person at their homes. A questionnaire delivered door to door was used because the questionnaire is rather long. First, the assistant gave them a short introduction of the purpose of this study. Then respondents were asked to complete the questionnaire while receiving a gift worth around 50 Norwegian Kroner (around 8 US dollars). Respondents were also told that the completed questionnaire would be collected personally by the assistant on the following day.

Demographics of achieved Norwegian sample

Among the 400 questionnaires collected, 20 questionnaires had to be removed from the sample due to incompletion. A total of 380 completed questionnaires were obtained for the final Norwegian data set. The final Norwegian sample contained 28% males and 72% females. The majority (83%) of respondents were between 20 and 60-years-old, and (85%) had a family size from 2 to 5. 96% of the respondents had a high school education or more. 75% were at least partly employed.

A similar data collection process was conducted in a middle size city in Southern China. 372 usable questionnaires were collected. The final Chinese sample contained 41% males and 59% females. The majority (86%) of respondents were between 20 and 60-years-old, and (98%) had a family size from 2 to 5. 78% of respondents had a high school education or more. 65% were at least partly employed.

Chapter 5 Measurement models

This chapter concerns the measurement models of this study. The first two sections discuss the descriptive statistics and the replacement of missing values. The last three sections contain the measurement models of global values, domain-specific values, and variables in the theory of trying, including discussions of reliability and construct validity.

5.1 Descriptive statistics

An overview of the descriptive statistics for the Norwegian sample is presented in Appendix B. Several items have kurtosis values of more than 2. For the measures of global values, several items measuring "warm relationship with others" and "safety" have high kurtosis values. These items appear as easy items to agree to and they are leptokurtic. For items measuring variables within the theory of trying, those measuring attitude toward trying and succeeding and self-efficacy have high kurtosis values. Similarly, it is easy to agree to such statements. Although kurtosis values of measurement items are critical in LISREL, maximum likelihood estimation is rather robust under conditions of severe non-normality of data compared to other estimation methods (Olsson, Troye and Howell 1999, Kline 1998:P.209). However, this didn't appear to be a problem, since most of our models fit well.

5.2 Missing values

Missing values do not appear to be a problem for most items in the Norwegian sample except for those measuring the global attitude and attitude components toward preparing a dinner (As, Af and Ap). For example, for the third item measuring the global attitude toward preparing a dinner for friends (Ag), there are 18% of cases with missing values. Because the percentage of missing values for the attitude items is high, we need to consider the strategy for handling missing values.

One can either delete cases with missing values or replace missing values. There are two ways to delete missing values in LISREL, list-wise deletion or pair-wise deletion. List-wise

deletion means a case with missing values is ignored in all calculations. Pair-wise deletion means it is ignored only for calculations involving that variable. Given that the structural equation model uses covariance matrices as input, list-wise deletion is recommended where the sample is fairly large and the number of cases to be dropped is small and the cases are missing completely at random. A rule of thumb is to use list-wise deletion when this would lead to elimination of 5% of the sample or less. Pair-wise deletion is not recommended as it can lead to covariance matrices which are non-positive definite (Kline 1998; P.76).

When list-wise deletion cannot be used, some form of data imputation is recommended. Imputation means the missing values are estimated. In mean imputation the mean of the variable is substituted. Regression imputation predicts the missing value based on other variables that are not missing. Note that imputation by substituting mean values is not recommended as this shrinks the variances of the variables involved.

In the current study, attitude items have the most severe problem with missing values. These items include measures of global attitude, attitude toward trying and succeeding, attitude toward trying and failing, and attitude toward process. In both the Norwegian and Chinese samples, the sample sizes would be reduced about 30% by using list-wise deletion of missing values. Typically, respondents only answered the first item of the two or three items that measured the same attitude construct. For example, for the two sequent items measuring attitude toward success, respondents only rated the first item and ignored the second one. Since the sample size would be reduced significantly by list-wise deletion, it was necessary to consider an appropriate strategy to replace these missing values.

Rules for replacing missing values

In the current study, we replaced missing values with the following rules: if one construct has two or more measurement items and only one item has a value, then we replaced missing values with the value of the existent item; if more than two items have values, then we replaced missing values with the mean of the existent items. We considered the strategy suitable for the following reasons. First, it uses the local information from the same respondent to replace the missing information. Second, it is consistent with the response pattern of other subjects who scored all items. Most of these respondents scored the same or similar on the second and the third items as on the first item. In order to further examine the influences of the replacement of missing values on the models, we compared the

measurement models and the structure models with the two different sample sizes: one sample size after list-wise deletion and one sample size with replaced missing values. No significant difference emerged for these two groups of models. See Appendix C for more details.

5.3 Measurement model of global values measured by the MILOV scale

A two-step approach was applied for testing structural equation models (Anderson and Gerbing 1988). First, we estimated the measurement model without imposing any structural constraints. This allowed us to inspect model misfits that are due to measurement alone. In the second step, we tested the structural relationships proposed by the theory. This approach can avoid the problem of interpretational confounding resulting from a one-step approach.

In this chapter, we focus on the measurement models. Four measurement models were estimated because of the large number of variables. One measurement model is for global values, one for domain-specific values in food prosumption, and two for variables within the theory of trying for two different situations. It is necessary to divide the measurement model into four sub-models for both technical and simplicity reasons. LISREL 8.54 (Joreskog and Sorbom 2003) was used for data analysis in this study.

In this section, we present the measurement models of global values measured by the MILOV scale (Herche 1994). In the next two sections, the measurement model of domain-specific values measured by a self-developed scale and that of the theory of trying in two different situations will be presented.

5.3.1 Exploratory factor analysis and confirmatory factor analysis

We applied Herche's MILOV scale (Multiple-item adaptation of List of Values) to measure global values. Respondents were ordinary household members from a major Norwegian city (N=366). First, to assess the nine-factor structure of global values measured by the MILOV scale, an exploratory factor analysis was run to assess the degree to which the items loaded on the "correct" factors and which, if any, loaded on "incorrect" factors. Most items associated

with the nine factors were loaded on the "correct" factors. See Appendix E for more detail on the exploratory factor analysis.

Then, we continued to test the nine-factor structure of global values by applying confirmatory factor analysis in LISREL. An initial analysis, representing the 44 items loaded on the 9 factors, revealed the following results in Table 5.1(Model 1). The model fits marginally well. Further, eight items with low item reliability (squared multiple correlations <0.21) were removed from the measurement model. 36 items remained for a new run of confirmatory factor analysis (Model 2). As shown in Table 5.1, Model 2 has acceptable fit for all the four indices. Therefore, it was chosen as the final measurement model of global values measured by MILOV. Reliability and construct validity of the constructs in this model are also addressed below.

Table 5.1: Fit indices of measurement models (Global values measured by MILOV)

	Goodness of fit[1]	Specifications
Model 1	Chi-square = 3028.35 (df = 866) RMSEA = 0.083 NNFI = 0.89 CFI = 0.90 Standardized RMR= 0.083	MILOV scale with 44 items
Model 2	Chi-square = 1884.37 (df = 558) RMSEA = 0.078 NNFI = 0.92 CFI = 0.93 Standardized RMR= .073	MILOV scale with 36 items

Table 5.2 presents an overview of the factor loading, item reliability, average variance extracted, and composite reliability. All factor loadings were reasonably high and are significant. The item reliability varied from 0.23 to 0.85. Although the desirable item reliability is 0.5, we retained some items with item reliability less than 0.5 because we wanted to have a broad construct domain. The standard of composite reliability is exceeding 0.6. Composite reliability of all subscale exceeded 0.6.

[1] Four fit indices are reported for models in the current study. They are RMSEA, CFI, NNFI and SRMR. In addition, Chi-square is also reported. A brief discussion of these fit indices is included in Appendix D.

Table 5.2: Factor loading and reliability (the measured model of global values: MILOV-36 item)

Items	Factor loading	Item reliability	Average variance extracted	Composite reliability
fun1	0.77	0.60	0.73	0.84
fun3	0.92	0.85		
belong1	0.70	0.49	0.52	0.81
belong2	0.65	0.42		
belong3	0.75	0.56		
belong4	0.78	0.60		
relation1	0.52	0.27	0.44	0.82
relation2	0.73	0.53		
relaton3	0.82	0.67		
relation4	0.59	0.35		
relation5	0.63	0.39		
relation6	0.65	0.42		
be-respected2	0.56	0.31	0.46	0.71
be-respect3	0.56	0.32		
be-respected4	0.87	0.76		
fulfill2	0.75	0.56	0.45	0.76
fulfill3	0.53	0.28		
fulfill4	0.81	0.65		
fulfill5	0.57	0.32		
self-respect4	0.75	0.56	0.56	0.87
self-respect5	0.74	0.55		
self-respect6	0.75	0.56		
self-respect7	0.72	0.53		
self-respect8	0.79	0.62		
accomplish1	0.48	0.23	0.35	0.73
accomplish2	0.62	0.38		
accomplish3	0.56	0.32		
accomplish4	0.68	0.46		
accomplish5	0.61	0.38		
safe2	0.92	0.85	0.69	0.87
safe3	0.90	0.81		
safe4	0.64	0.41		
excite1	0.50	0.25	0.47	0.77
excite2	0.86	0.74		
excite3	0.78	0.61		
excite4	0.52	0.27		

Convergent validity and discriminant validity

There are some ways to access construct validity in the structural equation modeling. Convergent validity can be assessed by inspecting factor loading (Anderson and Gerbing 1988) and the model fit. All the factor loading of the nine factors were reasonably high and

significant. The model fit indices were acceptable as well. So, convergent validity is assured based on these criteria.

Discriminant validity can be assessed by checking the correlations among these nine factors (Anderson and Gerbing 1988, Bagozzi and Heatherton 1994). The degree of discriminant validity is inversely proportional to the magnitude of the correlations among factors. Strong discriminant validity will be achieved when the correlations are non-significant or small; weak discriminant validity will be achieved when the correlations are high but less than 1 by an amount greater than twice the standard error of the estimate of the correlation. Lack of discrimination in a strict statistical sense occurs when the correlations within 2 standard error of 1.00. As shown in Table 5.3, all correlations among factors are significantly less than 1.

Table 5.3: Correlations among nine dimensions of global values

	Fun	Belong -ing	Rela- tion	Be-res pected	Fulfil -ment	Self -respect	Accom- plish	Safety	Excite -ment
Fun	1.00								
Belonging	0.31 (0.06)	1.00							
Relation	0.30 (0.06)	**0.89** (0.02)	1.00						
Be-respected	0.23 (0.06)	0.32 (0.06)	0.27 (0.06)	1.00					
Fulfillment	0.62 (0.04)	0.33 (0.06)	0.21 (0.06)	0.52 (0.05)	1.00				
Self-respect	0.26 (0.06)	0.51 (0.05)	0.53 (0.05)	0.31 (0.06)	0.65 (0.04)	1.00			
Accomplish	0.44 (0.06)	**0.67** (0.05)	**0.77** (0.04)	0.43 (0.06)	0.48 (0.06)	**0.73** (0.04)	1.00		
Safety	0.29 (0.05)	0.71 (0.03)	0.65 (0.04)	0.36 (0.06)	0.41 (0.05)	0.58 (0.04)	**0.63** (0.04)	1.00	
Excitement	**0.75** (0.03)	0.08 (0.06)	0.16 (0.06)	0.18 (0.06)	0.55 (0.05)	0.21 (0.06)	0.45 (0.06)	0.05 (0.06)	1.00

Note: Standard errors in parentheses

Further, according to Fornell and Larcker's (1981) criterion, discriminant validity is achieved if average variance extracted (AVE) is higher for each latent construct than the squared correlation between the constructs. As shown in Table 5.2 and Table 5.3, the AVE for the "belonging" factor and the "Relation" factor was 0.52 and 0.44 respectively, and the squared correlation between the factors is $(0.89)^2$ was 0.79. Consequently, the discriminant validity between "belonging" and "relation" is not achieved according to Fornell/Larcker's criterion. Similarly, the discriminant validity between "fun" and "excitement" and between

"accomplishment" and "self-respect" is not achieved. In addition, the discriminant validity between "accomplishment" and other three factors (belonging, relation, and safety) is not achieved. This is possible due to the low AVE of "accomplishment" (0.35), which implies the sub-scale for the "accomplishment" factor may not measure this latent construct well.

The three underlying values dimensions

The lack of discriminant validity between "belonging" and "relation", between "fun" and "excitement", and between "accomplishment" and "self-respect" indicates that some common factors may stand behind them. This is consistent with previous findings that three underlying value dimensions emerge from the nine values measured by the single-item scale of List of Values (Homer and Kahle 1988, Kamakura and Novak 1992). These studies suggest a three-dimensional structure for global values. Typically, one dimension has high weights on "warm relationships with others" and "a sense of belonging", which is labeled as the interpersonal dimension. The second dimension, labeled as the personal dimension, includes factors such as "sense of accomplishment", "self-respect", and "self-fulfillment". The third dimension weights highly on "fun and enjoyment" and "excitement", and it is labeled as the fun dimension.

The factor correlations from our confirmatory factor analysis are consistent with the previous studies. As shown in Table 5.3, "warm relationships with others" correlated highly with "a sense of belonging" (0.89); "accomplishment" correlated highly with "self-respect" (0.73); and "fun and enjoyment" correlated highly with "excitement" (0.75). Further, the discriminant validity between the factors mentioned above is not achieved according to Fornell/Larcker's criterion. So, it is possible that three higher order factors stand behind the nine value factors measured by MILOV.

In order to construct a three-dimensional value structure that is consistent with previous findings, three factors were removed from the original 9 factors measured by MILOV. These were safety, being well-respected, and self-fulfillment. Safety correlates highly with factors in both the interpersonal and the personal dimensions, so it is difficult to classify safety in either dimension. Similarly, self-fulfillment correlates highly with factors in the fun and personal dimensions. Be-respected was removed because it only had a moderate correlation with self-fulfillment. Consequently, six factors remained for a possible second-order factor analysis.

5.3.2 Second-order factor analysis of global values (MILOV)

A framework of representing scales

Before we turn to the second-order factor analysis of global values, we first present a framework of representing scales in four different ways by using a simple example (Bagozzi and Heatherton 1994, Bagozzi and Edwards 1998). Figures 5.1-5.4 summarize four ways that the 26 items hypothesized to measure six factors of the global values can be represented. They are the total disaggregated model, the partial disaggregation model, the partial aggregation model, and the total aggregation model. Moreover, three second-order factors are constructed to represent the three value dimensions underlying the six value factors. They are labeled as the fun, the interpersonal, and the personal dimension in global values.

As shown in Figure 5.1, under the total disaggregated model, each value factor is shown as a first-order factor with at least two items directly connected to it. Each individual item is an indicator; these items constitute the most concrete operationalization for a value factor. Three second order factors stand behind the six value factors. These are labeled as G-Fun (the fun dimension in global values), G-Interpersonal (the interpersonal dimension in global values), and G-Personal (the personal dimension in global values).

In Figure 5.2, under a partial disaggregation model, items within each value factor are aggregated (e.g., summed or averaged), and the aggregates are used as indicators of the value factor. In other words, items for a value factor are split into several sets of items. The aggregate of each set of items is used as an indicator. Each value factor (except for fun and enjoyment) has two aggregated indicators in this model. Three second-order factors stand behind the six value factors.

The third model in Figure 5.3 is a partial aggregation model. In such a model, all items for one value factor are aggregated as one indicator. The aggregations serve as indicators of three second-order factors that correspond to the three dimensions of global values. So, the three second-order factors of value dimensions are actually reduced to three first-order factors in this model.

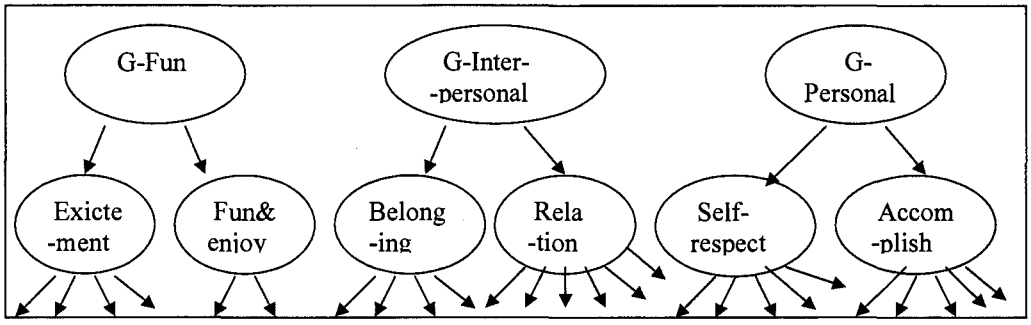


Figure 5.1: The total disaggregation model of six value factors of the global values

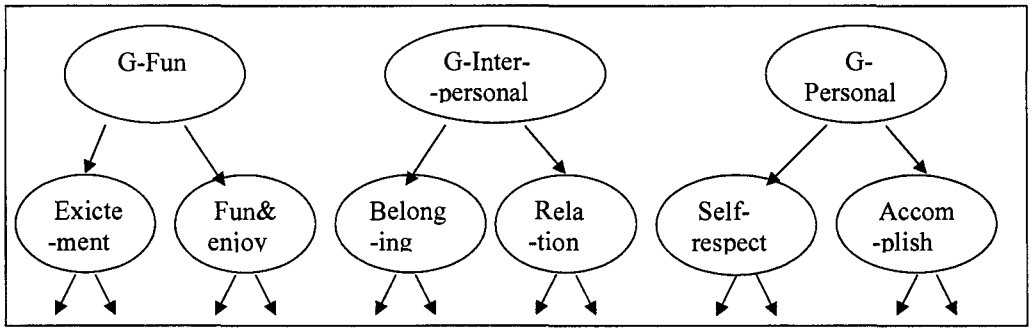


Figure 5.2: The partial disaggregation model of six value factors of the global values

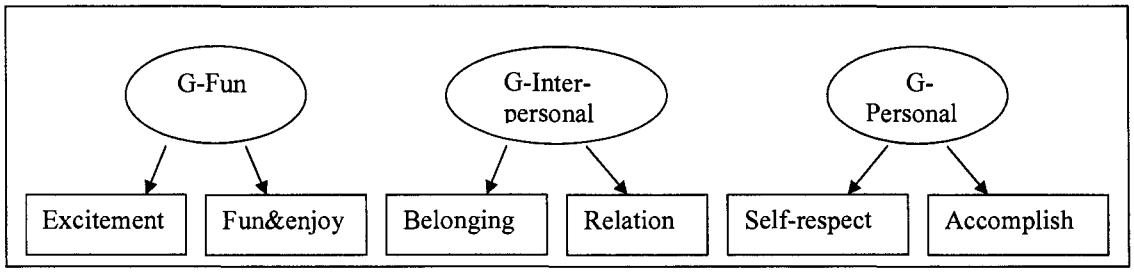


Figure 5.3: The partial aggregation model of six value factors of the global values

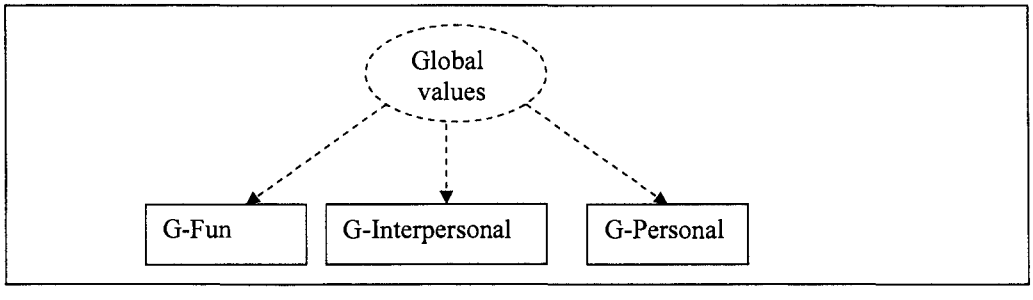


Figure 5.4: The total aggregation model of the global values

The last model in Figure 5.4 is a total aggregation model. Under such a model, the three underlying value dimensions are further aggregated as three indicators. It is naturally to consider if those three aggregated indicators measure a higher order factor of global values. The theoretical existence of such a higher order factor of global value factor is an open question, as indicated by the dished line in Figure 5.4. However, we are not interested in whether such a factor of global value factor exists or not; we just use it to demonstrate a total aggregation model. This higher order factor of global value is hypothesized to account for variations in all measurement items, except for measurement errors.

In the following, we will discuss what was chosen from these four forms of models to represent our data on global values measured by the MILOV scale.

Total disaggregation model

As shown in Figure 5.1, the six first-order factors with individual measurement items are an example of the total disaggregation model. The total disaggregation model is the most concrete representation of a construct. Its advantages are: 1) giving most detailed level of analysis, and 2) ability to specify and test for uniqueness of sub-scales. However, the primary disadvantage of such a model is that measures of factors tend to exhibit greater amounts of measurement errors, and correlations among measures tend to be less proportional (i.e.. large discrepancies could exist between correlations of items within and across factors). Consequently, the likelihood of achieving a satisfactorily fitting model is smaller. Moreover, it requires a larger sample size to achieve a reasonable ratio of cases to parameter estimates.

From a practical standpoint, applying a total disaggregation model to global values is not suitable in our study. Because global values are only one part of a complex conceptual model, we want to simplify this part of the model in order to achieve a satisfactory fit for the whole model. Therefore, a partial disaggregation model is considered.

Partial disaggregation model

As shown in Figure 5.2, the only difference between a partial disaggregation model and a total disaggregation model is that each indicator is constructed as the average (or sum) of two or more items. That is, items for a value factor are split randomly into two sets; the aggregate of items in each set is used as one indicator. Usually, each factor has two aggregated indicators. The advantages of such a model are that it reduces the number of parameters to be

estimated and at the same time, it tends to smooth out measurement error. Compared to the total disaggregation model, it requires smaller sample size and generally has a better model fit. At the same time, it retains the ability to specify and test for uniqueness of subscales.

Thus, we first applied a partial aggregation model for the six value factors measured by MILOV without the three second-order factors. We aggregated multiple items of each factor into two aggregated indicators. For example, if one factor had more than 2 items, then they were randomly divided into two groups. The average of items in each group forms an aggregated indicator for that factor. So in total, these 6 factors have 12 aggregated items with 2 aggregated items for each factor. The structural equation model of the six value factors fits the data well, as evidenced by the following goodness-of-fit measures in Table 5.4.

Table 5.4: Fit indices of measurement models (Global values measured by MILOV)

	Goodness of fit	Specifications
Model	Chi-square = 82.21 (df = 39) RMSEA = 0.055 NNFI = 0.97 CFI = 0.98 Standardized RMR= .035	Partial disaggregation model for six value factors measured by MILOV

As shown in Table 5.5, all factor loadings were high and significant. The range of item reliability is reasonable, from 0.40 to 0.82. Composite reliability of most subscales exceeds 0.6; only accomplishment has a composite reliability of 0.5. Convergent validity was assessed by inspecting factor loadings and the model fit. The model fit indices were acceptable as well. Therefore, convergent validity is assured.

We assessed discriminant validity by checking the correlations among the 6 factors. All the factor correlations were significantly less than 1, as shown in Table 5.6. In addition, according to Fornell/Larcker's criterion (1981), the discriminant validity between "belonging" and "relation", between "accomplishment" and "relation", and between "accomplishment" and "self-respect" is not achieved.

Table 5.5: Factor loading and reliability of six value factors in partial disaggregation model

Items	Factor loading	Item reliability	Average variance extracted	Composite[2] reliability
excite1	0.71	0.51	0.67	0.80
excite2	0.91	0.82		
fun1	0.63	0.40	0.60	0.74
fun3	0.89	0.79		
belong1	0.76	0.58	0.55	0.70
belong2	0.71	0.51		
relation1	0.81	0.65	0.60	0.75
relation2	0.74	0.55		
self-respect4	0.84	0.71	0.69	0.81
self-respect5	0.81	0.66		
accomplish1	0.67	0.45	0.46	0.50
accomplish2	0.68	0.47		

Table 5.6: Correlations among six factors of global values

	Fun	Excite -ment	Belong -ing	Relation	Self -respect	Accomp -lishment
Fun	1.00					
Excitement	0.73 (0.04)	1.00				
Belonging	0.27 (0.06)	0.07 (0.07)	1.00			
Relation	0.30 (0.06)	0.21 (0.06)	**0.91** (0.04)	1.00		
Self-respect	0.25 (0.06)	0.17 (0.06)	0.45 (0.06)	0.48 (0.06)	1.00	
Accomplishment	0.40 (0.06)	0.46 (0.06)	0.65 (0.06)	**0.77** (0.05)	**0.73** (0.05)	1.00

Note: Standard errors in parentheses

Afterwards, we added three second-order factors to the above model of the six value factors. The three second-order factors are constructed to represent the three value dimensions underlying the six value factors. However, the partial disaggregation model with three second-order factors demonstrated poor fit. The results are not presented here in the interests of brevity. Instead, we turn our attention to a more abstract form of models, the partial aggregation model.

[2] This is the formula to calculate composite reliability:

$$\rho_c = \frac{(\Sigma \lambda_i)^2}{(\Sigma \lambda_i)^2 + \Sigma \theta_{ii}}$$

Partial aggregated model

The partial aggregation model is more abstract than the partial disaggregation model. Figure 5.3 depicts a first-order partial aggregation model applied to the global values. The three first-order factors correspond to the three second-order factors in the disaggregation models shown in Figure 5.1 and Figure 5.2. Each indicator of a first-order factor is an aggregation (i.e., average) of items from the respective MILOV subscale.

By using a partial aggregation model, we give up the ability to specify and test for uniqueness of subscales. However, the focus is to explore the properties of integrated dimensions of a scale. The structural equation model in Figure 5.3 yielded an acceptable fit, shown by the following goodness-of-fit measures in Table 5.7.

Table 5.7: Fit indices of measurement models (Global values measured by MILOV)

	Goodness of fit	Specifications
Model	Chi-square = 25.69 (df = 6) RMSEA = 0.095 NNFI = 0.93 CFI = 0.97 Standardized RMR= .038	Partial aggregation model for MILOV's 6 dimensions

Table 5.8: factor loading and reliability of six value factors in partial aggregation model

Items	Factor loading	Item reliability	Average variance extracted	Composite reliability
fun	0.74	0.55	0.56	0.72
excitement	0.75	0.57		
belonging	0.74	0.54	0.67	0.80
relation	0.89	0.80		
self-respect	0.60	0.36	0.56	0.71
accomplishment	0.87	0.76		

As shown in Table 5.8, all factor loadings were high and significant. The range of item reliability is reasonable, from 0.36 to 0.80. Composite reliability of all subscales exceeded 0.6. Convergent validity is assured by the satisfactory factoring loading and model fit. As we seen in Table, factor correlations were also significantly less than 1. So the requirement of discriminant validity is also achieved. Furthermore, the discriminant validity for all three factors is also achieved according to Fornell/Larcker's criterion (1981).

Table 5.9: Correlation among factors in the partial aggregation model

	G-Fun	G-Interpersonal	G-Personal
G-Fun	1.00		
G-Interpersonal	0.27	1.00	
	(0.06)		
G-Personal	0.44	0.68	1.00
	(0.06)	(0.05)	

Note: Standard errors in parentheses

As shown in Table 5.9, except for a moderately high correlation between the interpersonal dimension and the personal dimension of global values, the fun dimension correlated relatively low with the other dimensions. This indicates a low chance that a higher order factor of global values exists behind these three value dimensions. Therefore, there is no reason to apply a total aggregation model to our global value data as shown in Figure 5.4. To sum up, we applied a partial aggregation model for the global values measured by MILOV, as shown in Figure 5.3.

5.4 Measurement model of domain-specific values in food prosumption

In this section, we present the measurement models of domain-specific values measured by a self-developed scale. First, the dimensional structure of domain-specific values is assessed and tested by exploratory factor analysis and confirmatory factor analysis. Then, a second-order factor analysis is applied to domain-specific values based on the results of confirmatory factor analysis.

5.4.1 Exploratory factor analysis and confirmatory factor analysis

Exploratory factor analysis

In order to assess the dimension structure of the 29-item scale of domain-specific values in food prosumption, an exploratory factor analysis was first run. The Maximum likelihood extraction solution was rotated using an oblique technique to examine the factor structure. The first five factors accounted for 59.5% of the total variance, respectively, while no additional factor accounted for more than 4.5%. Factors 1 and 4 both consist of fun items, so we decided to combine these two factors. A restrained 4 factor solution shows 48.5% of the total variance was explained by these four factors.

Table 5.10 presents factor loading of the restrained four-factor solution. 8 items loaded highly on the first rotated factor, 2 items loaded highly on the second, 6 items on the third factor, and 5 on the fourth factor. The remaining items failed to load highly on the first four factors. Thus, only the 21 items that loaded highly (factor loading >0.40) on the four factors were retained for further analysis.

Table 5.10: Exploratory factor analysis of domain-specific values in food prosumption: a restrained 4-factor solution

Items	Factor 1	Factor 2	Factor 3	Factor 4
fself-respect3	,70			
fself-respect2	,60			
faccomplish1	,59			
fself-respect1	,59			
fbe-respected4	,58			
fbe-respect3	,57			
faccomplish4	,49			
faccomplish3	,41			
fbe-respected1				
frelation3				
fsafe4				
fsafe2		-,94		
fsafe3		-,93		
fsafe1				
ffulfill2				
ffun3			,77	
ffun4			,72	
ffun2			,64	
ffun6			,52	
ffun1			,51	
ffun5			,50	
ffulfill1				
frelation2				-,71
fbelong2				-,65
frelation1				-,62
fbelong1				-,53
fbelong4				-,46
fbelong3				

Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.

a Rotation converged in 19 iterations.

Confirmatory factor analysis

Afterwards, the scale's dimensional structure was formally tested by confirmatory factor analysis in LISREL. An initial maximum likelihood factor analysis, representing the 21 items described above loaded on the four factors (Model 1), as shown in Table 5.11. The results revealed 2 items with low squared multiple correlations (individual item reliability < 0.25). These 2 items were deleted (Model 2). Furthermore, 2 items (individual item reliability <

0.40) with low squared multiple correlations were deleted to get better model fit. Finally, 17 items remained (Model 3).

Table 5.11: Fit indices of measurement models of domain-specific values

	Goodness of fit	Specifications
Model 1	Chi-square = 1109.99 (df = 183) RMSEA = 0.11 NNFI = 0.92 CFI = 0.93 Standardized RMR= 0.076	21 items
Model 2	Chi-square = 878.80 (df = 146) RMSEA = 0.11 NNFI = 0.93 CFI = 0.93 Standardized RMR= 0.071	19 items
Model 3	Chi-square = 574.51 (df = 113) RMSEA = 0.10 NNFI = 0.95 CFI = 0.96 Standardized RMR= 0.060	17 items

This 17-item model has acceptable fit for all the four indices. Therefore, it was chosen as the final measurement model of the domain-specific values in food prosumption. As discussed earlier, this is a total disaggregation model, because each factor has at least two indicators. Table 5.12 presents an overview of the factor loading, item reliability and composite reliability.

All factor loadings were reasonably high and significant. The item reliability varied from 0.36 to 0.86. Although the desirable item reliability is 0.5, we chose some items with item reliability less than 0.5. The standard of composite reliability exceeded 0.6. Composite reliability of all subscales exceeded 0.6.

All the factor loading of the 4 factors were reasonably high and significant. The model fit indices were acceptable as well. So, convergent validity is assured based on these criteria. In addition, all factor correlations were significantly less than 1. Thus, the discriminant validity

is achieved according to Anderson/Gerbing's requirement. Furthermore, the discriminant validity for all four factors is also achieved according to Fornell/Larcker's criterion (1981).

Table 5.12: Factor loading and reliability of domain-specific values with 17 items

Items	Factor loading	Item reliability	Average variance extracted	Composite reliability
fself-respect1	0.82	0.67	0.61	0.89
fself-respect2	0.67	0.45		
fself-respect3	0.87	0.76		
faccomplish1	0.78	0.61		
fbe-respect3	0.75	0.57		
fsafe2.	0.93	0.86	0.86	0.93
fsafe3	0.93	0.86		
ffun1	0.75	0.57	0.61	0.88
ffun3	0.60	0.36		
ffun4	0.87	0.75		
ffun5	0.82	0.68		
ffun6	0.83	0.69		
fbelong1	0.66	0.44	0.63	0.89
fbelong2	0.88	0.78		
fbelong4	0.75	0.56		
frelation1	0.70	0.50		
frelation2	0.93	0.86		

Table 5.13: Correlation among the four factors in the domain-specific values in food prosumption

	Fun	Interpersonal	Personal	Safe
Fun	1.00			
Interpersonal	0.68	1.00		
	(0.03)			
Personal	0.74	0.74	1.00	
	(0.03)	(0.03)		
Safe	0.47	0.52	0.43	1.00
	(0.05)	(0.04)	(0.05)	

Note: Standard errors in parentheses

As shown in Table 5.13, correlations among the interpersonal, personal and fun dimensions were high, and the safe dimension had moderate correlations with the other three dimensions. Theoretically, this may indicate that a higher order latent variable possibly stands behind these value dimensions. Methodologically, if these value dimensions of domain-specific values are used as predictors of other variables such as attitude components, their high correlation will result in multi-colinearity. Multi-colinearity means several predictors are

linearly dependent on each other. In structural equation modeling, multi-colinearity may make it difficult for models to fit well; even if models fit well, we may doubt the validity of the path coefficient. Some of our preliminary results showed that the path from the personal dimension in domain-specific values to attitudes was negative although these two constructs correlated positively, when all the value dimensions serve as predictors of attitudes toward food prosumption.

One possible way to overcome multi-colinearity in structural equation modeling is to construct a second-order factor for the highly correlated latent variables. Although correlations between the safe dimension and other dimensions were moderate, we consider that the safe dimension is still part of the domain-specific values. Therefore, we first constructed a second-order factor for all the four dimensions in domain-specific values in food prosumption. As discussed in the measurement model of global values, we applied a partial disaggregation model to the domain-specific values as well. That is, each latent variable has two aggregated indicators.

5.4.2 Second-order factor analysis of domain-specific values

A second- order factor with four first-order factors

First, we began with a second-order factor of domain-specific values with four first order factor. The structural equation model in Figure 5.5 yielded a good fit, shown by the following goodness-of-fit measures in Table 5.14

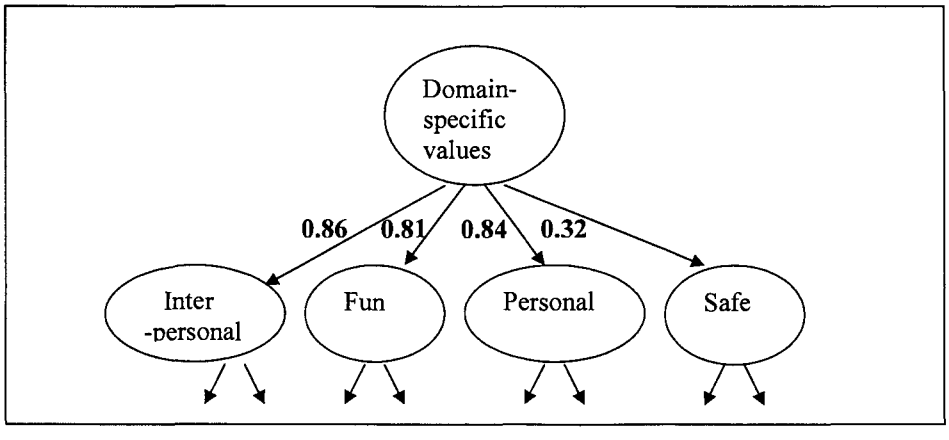


Figure 5.5: The second-order factor of domain-specific values with four first-order factors

Table 5.14: Fit indices of measurement models (Second-order factor analysis of domain-specific values, with four first-order factors)

	Goodness of fit	Specifications
Model	Chi-square = 40.14 (df = 16) RMSEA = 0.066 NNFI = 0.98 CFI = 0.99 Standardized RMR= 0.033	Four first-order factors

Table 5.15: The factor loading and error variance of the second-order factor

Domain specific value dimension	Factor loading	Error variance
Interpersonal	0.86	0.26
Fun	0.81	0.35
Personal	0.84	0.30
Health	0.32	0.90

As shown in Figure 5.5 and Table 5.15, three of the four first-order factors had high loading on the second-order factor of domain-specific values. However, the safe dimension had a relatively low factor loading. The safe dimension addresses health concerns in food prosumption. It indicates that the health concern in food prosumption is different from the other three dimensions in domain-specific values. It is possible that health concerns for food is a more general construct, which can be obtained by different food-related behaviors. Health concern itself will influence how much value people perceive from food prosumption. That is, health concern may exert an impact on the other three value dimensions. Therefore, it is not appropriate to include the health concern as one of the first-order factors together with the other three dimensions. So, we turn to a second-order factor with three first-order factors by excluding the safe factor.

A second-order factor with three first-order factors

The structural equation model in Figure 5.6 yielded an acceptable fit, shown by the following goodness-of-fit measures (Model 1) in Table 5.16.

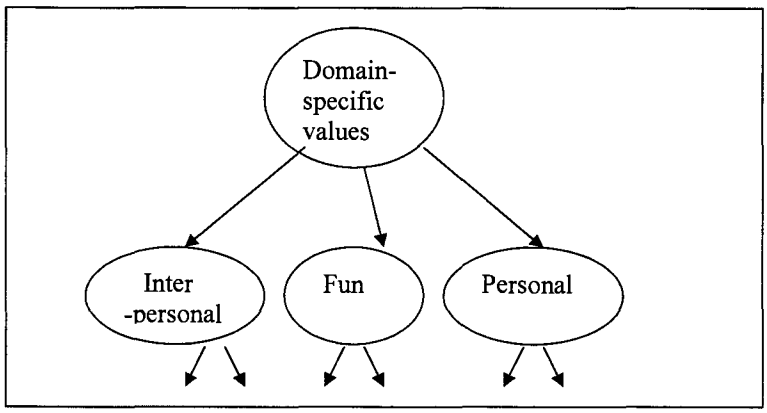


Figure 5.6: The second-order factor of domain-specific values with three first-order factors

Table 5.16: Fit indices of measurement models (Second-order factor analysis of domain-specific values, with three first-order factors)

	Goodness of fit	Specifications
Model 1	Chi-square = 24.46 (df = 6) RMSEA = 0.089 NNFI = 0.98 CFI = 0.99 Standardized RMR= 0.022	Three first-order factors
Model 2	Chi-square = 24.62 (df = 8) RMSEA = 0.073 NNFI = 0.98 CFI = 0.99 Standardized RMR= 0.023	The un-standardized factor loadings of the three first-order factors were fixed to 1

Table 5.17: The factor loading and error variance of the second-order factor

	Domain specific value dimension	Factor loading	Error variance
Model1	Interpersonal	0.85	0.28
	Fun	0.82	0.33
	Personal	0.84	0.29
Model2	Interpersonal	0.86	0.27
	Fun	0.81	0.34
	Personal	0.84	0.29

As shown in Table 5.17, all three first-order factors (Model 1) loaded highly on the second-order factor of domain-specific values. Because the un-standardized factor loadings of three

first-order factors were very close to one[3] in Model 1, we wanted to test whether the loadings were really one or not. Therefore, the three factor loadings were fixed to one in Model 2. The model fits better than Model 1, as shown in Table 5.16. A chi-square difference test was conducted to compare Model 1 and Model 2: $\Delta \chi^2$ (2) =0.16, (P=0.92). The result show that these un-standardized factor loadings were not significant different from one. As shown in Table 5.17, there were only minor differences between the standardized factor loadings of the two models.

The result suggests that the interpersonal, fun and personal dimensions represent different aspects of a higher order construct. This higher order latent construct exerts positive influence on all three value dimensions. It is possible to interpret this construct as the general interest one has for the domain of food prosumption. The more interest people have in food prosumption, the more likely they will perceive various values from performing such behaviors. Therefore, we label this second-order factor as domain-specific interest, which represents people's interest in food prosumption in general.

Table 5.18 also presents the factor loading of the aggregated indicators and the partition of variance[4] of these items. All the factor loadings for the first-order factors were reasonably high and significant. The total variance explained in a measurement item is divided into three parts: the error variance, the specific variance, and the common variance. The specific variance is the part of variance explained by the first-order factor; the common variance is the part of variance explained by the second-order factor.

Table 5.18: Factor loading and the partition of variance

Items	Factor loading	Error variance	Specific variance	Common variance
Interperson1	0.88	0.22	0.21[5]	0.57[6]
Interperson2	0.94	0.11	0.24	0.65
Fun1	0.94	0.11	0.30	0.58
Fun2	0.77	0.41	0.20	0.39
Personal1	0.90	0.18	0.23	0.57
Personal2	0.87	0.24	0.22	0.53

[3] The un-standardized factor loadings from the second-order factor to the interpersonal dimension is fixed to one, and the un-standardized factor loadings from the second-order factor to the fun dimension and to the personal dimension are 1.03 and 1.02, respectively.
[4] The calculation of the partition of variance is based on Model 2.
[5] Specific variance= $\lambda\psi\lambda' = (0.88)(0.28)(0.88) = 0.22$
[6] Common variance= $\lambda\Gamma\psi\Gamma'\lambda' = (0.85)(0.88)(1.00)(0.88)(0.85) = 0.56$

In sum, we applied a second-order factor structure with three first-order factors for domain-specific values in food prosumption. The three first-order factors represent the interpersonal, personal, and fun dimension in food prosumption. The second-order factor is interpreted as the general interest people have in food prosumption. Health concern in food prosumption is proposed to have an impact on such general interest.

5.5 Measurement model of the theory of trying

The last two measurement models include variables within the theory of trying for two different situations of food prosumption. They are: global attitude, three attitude components (As, Af, and Ap), social norms, self-efficacy, past behavior, and intention. A measurement model was run for both situations, as shown in Figure 5.7.

The situation of preparing a dinner for friends

The third measurement model includes variables in the theory of trying for the situation of preparing a dinner for friends. In order to improve the model fit, the two indicators of Af were combined into one aggregated indicator (the average). The error variance of this aggregated indicator was fixed[7] (Jorskog and Sorbom 1996; P.196). The model fits very well (Model 1), evidenced by the following fit indices in Table 5.19.

Table 5.19: Fit indices of measurement models (The theory of trying, in the situation of preparing a dinner for friends)

	Goodness of fit	Specifications
Model 1	Chi-square = 233.92 (df=78) RMSEA = 0.074 NNFI = 0.97 CFI = 0.98 Standardized RMR= 0.03	Af fixed

[7] Error variance of Af was fixed to 0.092. The correlation 0.94 between the two items of Af was assigned as the reliability of this aggregated indicator. The error variance of this aggregated indicator was fixed as (1-0.94)*(the variance of this aggregated indicator), which equal (1-0.94)*1.539=0.092.

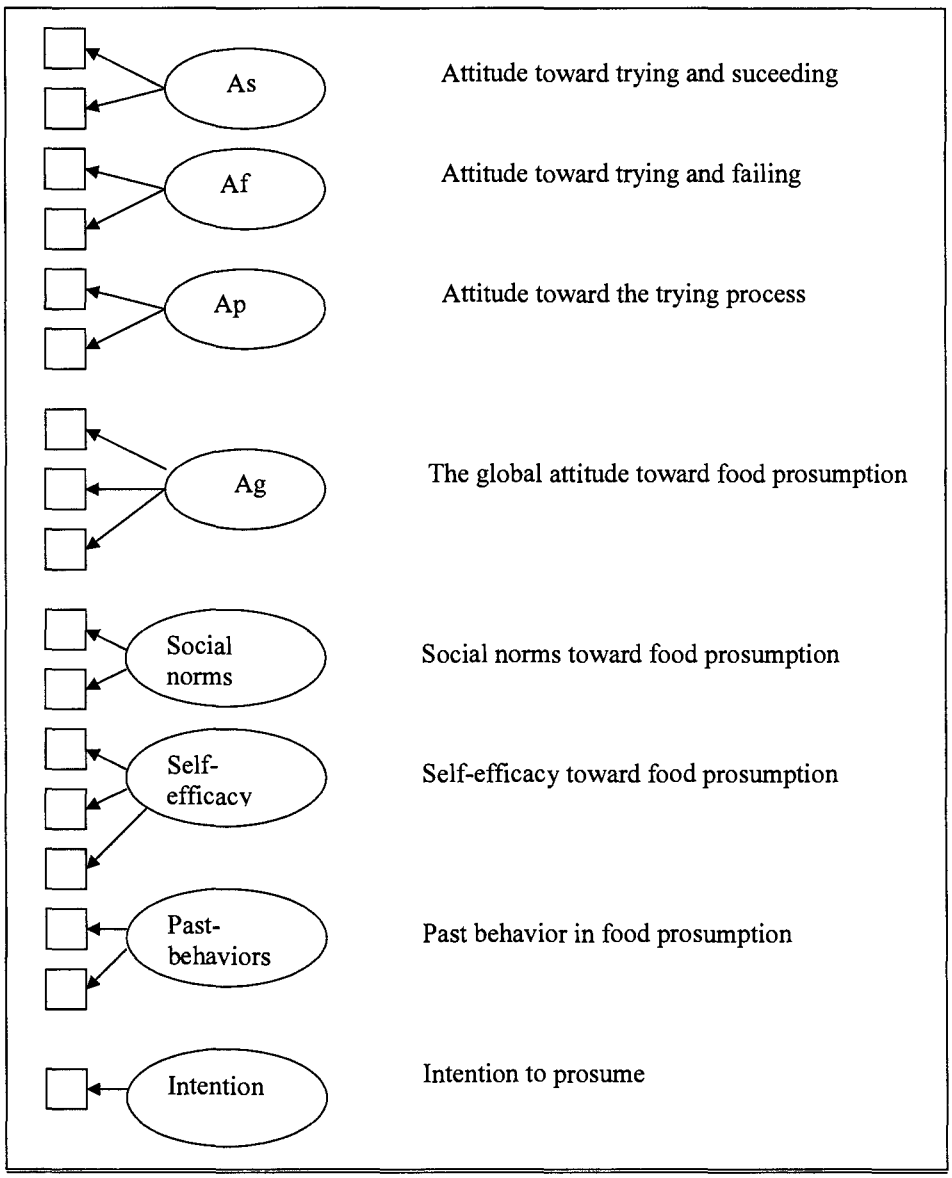


Figure 5.7: The measurement model of the theory of trying

The next step is to assess the reliability and construct validity of the constructs in this measurement model. Table 5.20 presents an overview of the factor loading, item reliability and composite reliability. The factor loadings of all the variables were high and significant. The item reliability varied from 0.63 to 0.99, exceeding the criteria of 0.5. Composite reliability of all subscales exceeded 0.6.

Table 5.20: Factor loading and reliability of variables within the theory of trying for the situation of preparing a dinner for friends

Items	Factor loading	Item reliability	Average variance extracted	Composite reliability
Ag1	0.94	0.88	0.90	0.97
Ag2	0.97	0.93		
Ag3	0.95	0.90		
As1	0.97	0.94	0.94	0.97
As2	0.97	0.94		
Af	1.00	0.91		
Ap1	0.99	0.99	0.95	0.97
Ap2	0.95	0.91		
SN1	0.79	0.63	0.72	0.84
SN2	0.90	0.81		
Self-efficacy1	0.87	0.76	0.76	0.91
Self-efficacy2	0.88	0.78		
Self-efficacy3	0.87	0.75		
Recency	0.82	0.68	0.70	0.82
Frequency	0.84	0.71		
Intention	1.00	1.00		

Note: Ag – Global attitude
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process
SN – Social norms

In total, convergent validity is assured because all the factor loadings were reasonably high and significant and the model fit indices were acceptable. The discriminant validity is also achieved according to Anderson/Gerbing's requirement (1988) since all factor correlations were significantly less than 1. Table 5.21 reports the correlation matrix between latent constructs. Furthermore, the discriminant validity for all latent constructs is also achieved according to Fornell/Larcker's criterion (1981).

Table 5.21: Correlations between latent variables with in the theory of trying for the situation of preparing a dinner for friends

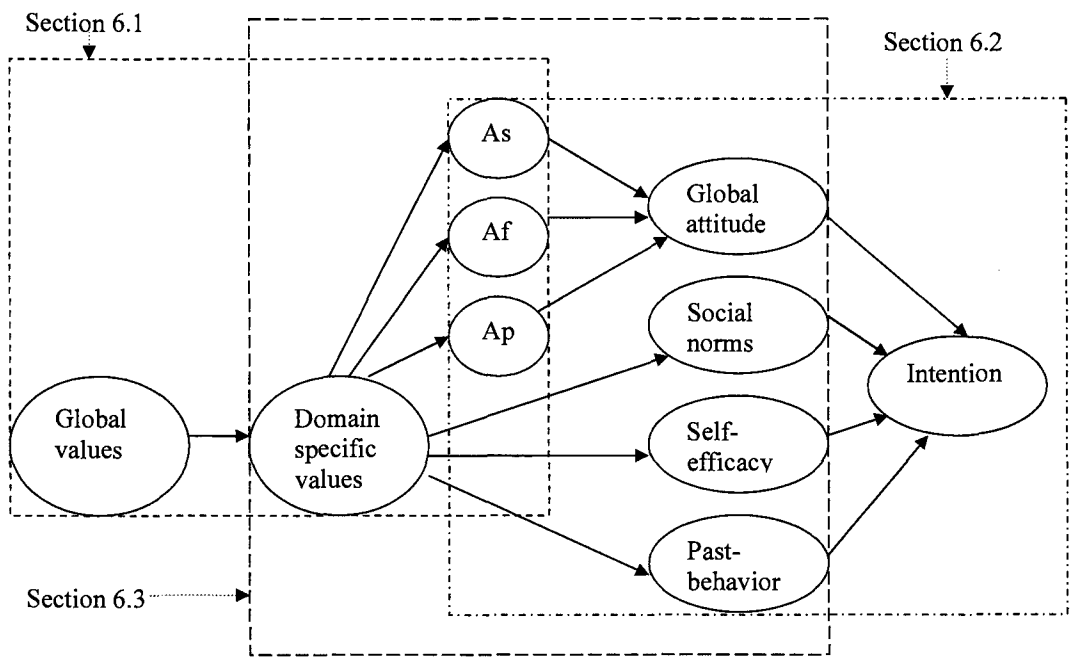
	Ag	As	Af	Ap	SN	Self-efficacy	Past behavior	Intention
Ag	1.00							
As	0.64	1.00						
	(0.03)							
Af	-0.19	-0.33	1.00					
	(0.05)	(0.05)						
Ap	0.58	0.41	-0.06	1.00				
	(0.04)	(0.04)	(0.05)					
SN	0.34	0.23	-0.22	0.32	1.00			
	(0.05)	(0.05)	(0.06)	(0.05)				
Self-efficacy	0.56	0.40	-0.23	0.39	0.44	1.00		
	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)			
Past behavior	0.54	0.36	-0.12	0.44	0.69	0.69	1.00	
	(0.04)	(0.05)	(0.06)	(0.05)	(0.04)	(0.04)		
Intention	0.55	0.40	-0.21	0.39	0.38	0.69	0.63	1.00
	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.03)	(0.04)	

Note: Standard errors in parentheses
Ag – Global attitude
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process
SN – Social norms

A similar procedure was applied to the situation of preparing a dinner for oneself. The model also fit well. See more detail in Appendix F.

Chapter 6 Structural models and hypotheses testing

This chapter contains structural models and hypotheses testing. First, Section 6.1 examines the relationship among global values, domain-specific values in food prosumption, and attitudes, as shown in Figure 6.1. In Section 6.2, we test relevant hypotheses within the theory of trying. Then, the relationships between domain-specific values and intention antecedents in the theory of trying are investigated in Section 6.3. The analyses in the first three sections were conducted for the situation of preparing a dinner for friends in the Norwegian sample. Section 6.4 and Section 6.5 test the generality of a simple version of the theory of trying across situations and across samples from different cultures.



As- Attitude toward trying and succeeding

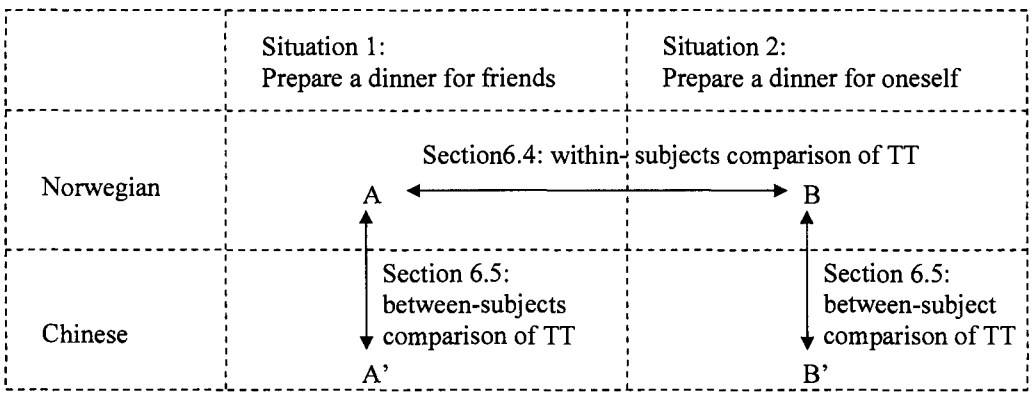
Af- Attitude toward trying and failing

Ap- Attitude toward the trying process

Figure 6.1: Hypotheses examined in section 6.1, section 6.2, and section 6.3

As shown in Table 6.1, Section 6.4 examines the impact of situation difference on the explanatory ability of the theory of trying in the Norwegian sample, as shown by the comparison between A and B. A simple of version of the theory of trying was applied. In Section 6.5, multi-group analyses are applied to test the generality of the theory of trying by using data from Norway and China, as shown by the comparison between A and A', and between B and B'. Finally, a summary of hypotheses testing is presented in Section 6.6.

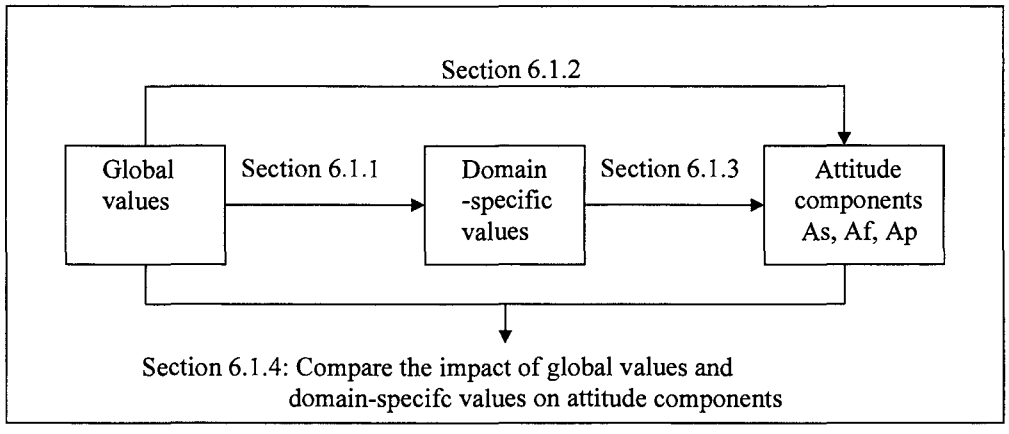
Table 6.1: The organization of Section 6.4 (situation difference) and Section 6.5 (cultural variation): test the generality of a simple version of the theory of trying (TT).



Structural equation modeling (SEM) was used to test the theoretical framework and its generality across situations and cultures. LISREL 8.54 (Joreskog and Sorbom 2003) was employed for the analyses.

6.1 Relationships among global values, domain-specific values and attitudes

This section explores the relationships among global values, domain-specific values in food prosumption, and attitude components (As, Af and Ap). The section is organized as shown in Figure 6.2. First, we examine the relationship between global values and domain-specific values in Section 6.1.1. Then, Section 6.1.2 looks at the influence of global values on the attitude components in food prosumption (As, Af, and Ap). Afterwards, in Section 6.1.3 we investigate the impact of domain-specific values on the attitude components. Finally, we inspect simultaneously the effects of global values and domain-specific values on attitude components in Section 6.1.4. We will both compare the impacts of both global values and domain-specific values on the attitude components and test the mediating effect of domain-specific values between global values and attitude components.



As – Attitude toward trying and succeeding

Af – Attitude toward trying and failing

Ap – Attitude toward the trying process

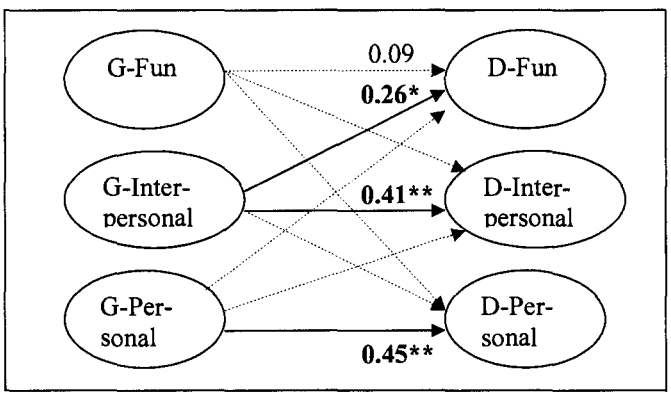
Figure 6.2: The organization of section 6.1

6.1.1 Relationships between global values and domain-specific values in food prosumption

The results from the measurement models supported that both global values and domain-specific values have three underlying dimensions. Those three dimensions are labeled as the interpersonal, personal and fun dimensions, respectively for both global values and domain-specific values. As discussed earlier, the three dimensions in global values are supposed to

impact their corresponding dimensions in domain-specific values. However, different dimensions of global values may vary as to how strongly they can influence their domain-specific counterpart. In this section, we are going to explore the relationships between global values and domain-specific values along the three dimensions.

We tested a structural model where the three dimensions in global values influence their counterpart in domain-specific values, as shown in Figure 6.3. The model fit well as shown by the goodness-of-fit measures in Table 6.2.



G-Fun – The fun dimension in global values
G-Interpersonal – The interpersonal dimension in global values
G-Personal – The personal dimension in global values
D-Fun – The fun dimension in domain-specific values
D-Interpersonal – The interpersonal dimension in domain-specific values
D-Personal – The personal dimension in domain-specific values
Note: * $p<0.05$ ** $p<0.01$

Figure 6.3: Relationship between global values and domain-specific values

Table 6.2: Fit indices of the structural model of the relationships between global values and domain-specific values

	Goodness of fit	Specifications
Model	Chi-square = 113.90 (df = 39) RMSEA = 0.073 NNFI = 0.97 CFI = 0.98 Standardized RMR= 0.034	Including three dimensions in global values and in domain-specific values

As suggested by Vinson (1977), global values will influence domain-specific values, but these two set of values are only partially consistent. Consistent with our expectations, the fun dimension in global values had no significant impact on the fun dimension in domain-specific values (γ =0.09, p >0.20), as shown in Figure 6.3. The fun values that people perceive in a specific domain relate strongly to their interests or experiences in that domain and thus have less connection to the general fun values people hold. Therefore, the fun values people attach to food prosumption do not necessarily concur with the general fun values they hold.

Supporting H1, the interpersonal dimension in global values had significant impact on the interpersonal dimension in domain-specific values (γ =0.41, p<0.0001). This suggests that the interpersonal dimension of global values has an influence in the specific domain of food prosumption, or, those who value social relations in general are likely to appreciate interpersonal values in food prosumption as well.

Further, the personal dimension in global values also had a significant influence on its corresponding dimension in domain-specific values (γ =0.45, p<0.001). It is possible that food prosumption is likely to be an important domain relevant to the respondents' self-concept in our sample, since they are household-members who are in charge of meal preparation at home. For them, the global personal values were consistent with their personal values attached to food prosumption.

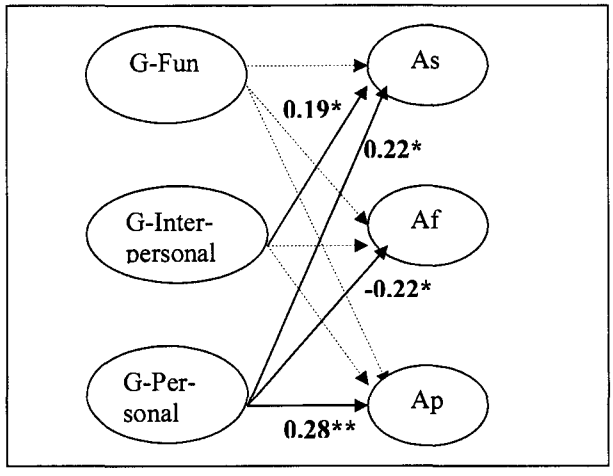
As we noticed, there was also a significant path from the global interpersonal values to the domain-specific fun values (γ =0.26, p<0.05). This could be due to the way the fun dimension in domain-specific values has been measured. For example, one item is worded as "It is fun to plan a dinner for my friends". The social context described in this item might lead to the connection between the fun values in food prosumption and the global interpersonal values.

Additionally, global values explained 19 percent of variance in the fun dimension, 29 percent of variance in the interpersonal dimension, and 25 percent of variance in the personal dimension in domain-specific values. In sum, the findings suggest that different dimensions in global values have different degrees of influence on their corresponding domain-specific values; they also only explain a limited portion of variance in domain-specific values in food prosumption.

6.1.2 Relationships between global values and attitude components

After testing out the relationships between global values and domain-specific values, the next step is to see how the two sets of values will influence attitudes in food prosumption. In this section, we look at the relationships between the three dimensions in global values and the attitude components in food prosumption (As, Af, and Ap).

We tested a structural model where the three dimensions in global values influence the three attitude components As, Af, and Ap, as shown in Figure 6.4. The model fit well as shown by the goodness-of-fit measures in Table 6.3.



G-Fun – The fun dimension in global values
G-Interpersonal – The interpersonal dimension in global values
G-Personal – The personal dimension in global values
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

Note: * $p<0.05$ ** $p<0.01$

Figure 6.4: Relationship between global values and attitude components

Table 6.3: Fit indices of the structural model of the relationships between global values and attitude components in food prosumption

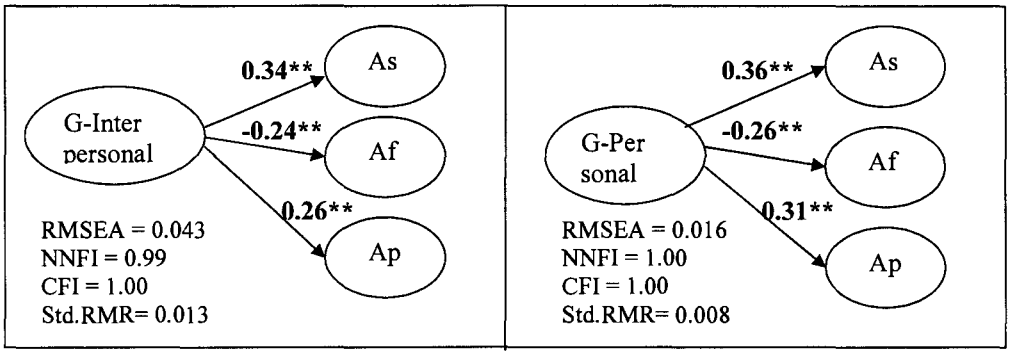
	Goodness of fit	Specifications
Model	Chi-square = 52.04 (df = 30) RMSEA = 0.045 NNFI = 0.98 CFI = 0.99 Standardized RMR= 0.032	Including three dimensions in global values and three attitude components

As shown in Figure 6.4, the fun dimension in global values had no significant impact on any of the three attitude components. It implies that fun values in general are irrelevant to attitudes in food prosumption. However, the personal dimension had significant effects on all three attitude components. The interpersonal dimension only had significant influence on attitude toward success (As). We suspect that the non-significant impact of the interpersonal dimension on Af and Ap was due to the high correlation between the interpersonal and personal dimensions (0.69).

Hypotheses 2a-2c argued for the significant influence of global value dimensions on attitude components. Partially supporting H2a, As was significantly influenced by the interpersonal- and the personal dimension in global values. Similarly, Af was significantly affected by the personal dimension, which gave partial support to H2b. Since As and Af represent evaluation of the anticipated consequences of succeeding and failing in performing a behavior, it makes sense that they relate more to the global interpersonal and personal values, which reflect higher level goals that the behavior may serve. Partially supporting H2c, Ap was also significantly affected by the personal dimension in global values. This could possibly be due to the feeling of accomplishment people can obtain from engaging in the process of food prosumption.

Further, in order to clarify if the lack of significant influence of the interpersonal dimension on Af and Ap was caused by the problem of multi-colinearity, we conducted additional analyses to check the influences of the two individual dimensions on attitude components. The results and fit indices are shown in Figure 6.5.

As shown in Figure 6.5, the interpersonal dimension in global values had positive, significant influences on attitude toward success (As) and attitude toward process (Ap), and had negative, significant influences on attitude toward failure (Af). It also explains the 12 percent of variance in As, 7 percent of variance in of Ap, and 6 percent of variance in Af. Similarly, the personal dimension influenced attitude toward success (As) and attitude toward process (Ap) positively, and influenced attitude toward failure (Af) negatively. 13 percent of variance in As, 10 percent of variance in of Ap, and 7 percent of variance in Af were explained by the global personal values. The results show that the interpersonal and personal dimensions in domain-specific values had almost equivalent influence on the three attitude components,



G-Interpersonal – The interpersonal dimension in global values
G-Personal – The personal dimension in global values
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process
Note: * $p<0.05$ ** $p<0.01$

Figure 6.5: Relationships between individual global value dimensions and attitude components

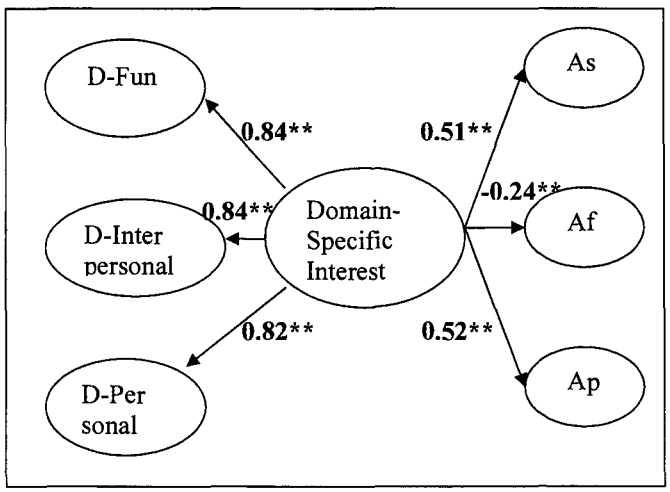
when they are examined individually. This confirmed our speculation of multi-colinearity caused by the high correlations between the two dimensions.

In sum, not all three dimensions in global values had significant impacts on attitude components toward food prosumption. The fun dimension especially had no significant influences on the attitude components.

6.1.3 Relationships between domain-specific values and attitude components

This section addresses the relationships between the three dimensions in domain-specific values and the three attitude components in food prosumption (As, Af, and Ap). As discussed earlier, the three dimensions in domain-specific values correlated highly. Therefore, we introduced a second-order factor that stands behind the three value dimensions to overcome the problem of multi-colinearity. The second-order factor underlying the three domain-specific value dimensions was labeled as domain-specific interest. It implies a general interest toward the domain of food prosumption. The more interested people are in food prosumption in general, the more likely they are to perceive different values from food

prosumption. We tested the relationship between domain-specific values and attitude components by including this second-order factor of domain-specific interest, as shown in Figure 6.6. The model fit well as evidenced by the goodness-of-fit measures in Table 6.4.



D-Fun – The fun dimension in domain-specific values
D-Interpersonal – The interpersonal dimension in domain-specific values
D-Personal – The personal dimension in domain-specific values
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process
Note: * $p<0.05$ ** $p<0.01$

Figure 6.6: Relationship between domain-specific values and attitude components

Table 6.4: Fit indices of the structural model of the relationships between domain-specific values and attitude components in food prosumption

	Goodness of fit	Specifications
Model	Chi-square = 105.19 (df = 38) RMSEA = 0.070 NNFI = 0.98 CFI = 0.98 Standardized RMR= 0.054	Including three dimensions in domain-specific values, a second-order factor of domain-specific values, and three attitude components

As shown in Figure 6.6, the second-order factor of domain-specific interest had significant effects on attitude toward trying and succeeding (As) (β = 0.51, $p<0.0001$), attitude toward trying and failing (Af) (β = -0.24, $p<0.0001$), and attitude toward process (Ap) (β = 0.52, $p<0.0001$).

The introduction of the second-order factor made it difficult to directly test hypotheses about relationships between the three dimensions in domain-specific values and the attitude components. Hypotheses H5a-5c proposed the significant impact of the three domain-specific values dimensions on the attitude components As, Af and Ap. Although we can not test H 5a, H5b, and H5c directly from the model in Figure 6.6, the above results give us some supporting evidence. The second-order factor behind the three domain-specific value dimensions had significant effects on all the attitude components.

Moreover, a simple model was run for each value dimension to examine their impact on the attitude components, since it is difficult to examine the effects of three value dimensions simultaneously. The results show that each individual dimension in domain-specific values had significant influence on all three attitude components. See the analysis in more detail in Appendix G.

However, we still can not directly test hypotheses that compare the effects of individual value dimensions on the attitude components. For instance, it is difficult to test hypothesis H5f that claims the fun dimension has stronger impact on Ap that the other two dimensions. Alternatively, we looked at the correlations among individual value dimensions and attitude components.

Correlations

Although examining correlations is only a weak test of our hypotheses, it still gives us some insightful indications of how different value dimensions influence attitude components. As shown in Table 6.5, only attitudes toward the trying process (Ap) correlated significantly higher with the fun dimension than with the other two dimensions.

Table 6.5: Correlations among dimensions of domain-specific values and attitude components

Domain-specific values	As	Af	Ap
Interpersonal	0.41 (0.05)	-0.16 (0.05)	0.40 (0.05)
Fun	0.48 (0.04)	-0.19 (0.05)	**0.58** (0.04)
Personal	0.38 (0.05)	-0.26 (0.05)	0.31 (0.05)

Note: Standard errors in parentheses; As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing Ap – Attitude toward the trying process

The results of hypotheses testing based on correlations were mixed. As hypothesized in H5f, the fun dimension should have stronger influences on Ap than the other two dimensions of domain-specific values. The higher correlation between fun dimension and Ap gives us confidence in our speculation, although the hypothesis was not directly confirmed. However, hypotheses H5e and H5f, which suggested that the interpersonal and personal dimensions would have stronger impact on As and Af, received no support from the correlations. Correlations among the three value dimensions and As were not significantly different. Likewise for the correlations among the three value dimensions and Af.

Overall, the second-order factor that represents the three dimensions in domain-specific values had significant impact on all the attitude components.

6.1.4 The impact of global values and domain-specific values on attitude components

Finally, we investigated the effects of global values and domain-specific values on attitude components simultaneously in this section. First, we compared the variance explained by global values and by domain-specific values in the attitude components. Then, the mediating effect of domain-specific values between the global values and the attitude components were examined.

We expected that domain-specific values in food prosumption would explain more variance in the attitude components than the global values. We compared the variance explained by all the dimensions in global values (as shown in Figure 6.4) and by all the dimensions in domain-specific values (as shown in Figure 6.6). The results are summed up in Table 6.6.

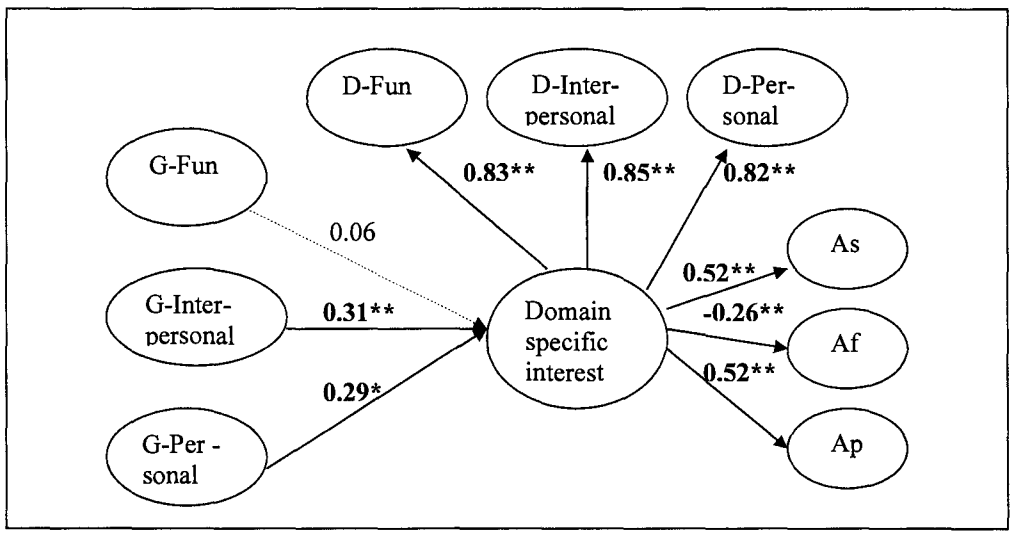
Table 6.6: Explained variance in attitude components by all the three value dimensions

Attitude Component	Global values	Domain-specific values
As	0.14	0.27
Af	0.09	0.06
Ap	0.10	0.30

Note: As – Attitude toward trying and succeeding Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

As we see in Table 6.6, domain-specific values explained more variance in the attitude components than global values, especially in As and Ap. Therefore, H3a, which argued more variance in the attitude components is explained by domain-specific values was supported.

Furthermore, we argued that the influences should flow from the global values to domain-specific values and to attitudes. It was assumed that domain-specific values would mediate the influence of the global values on the attitude components. We tested this assumption in LISREL. The second-order factor of domain-specific interest was included in the model, as shown in Figure 6.7. The model fit well, shown by the fit indices in Table 6.7 (Model 1).



G-Fun – The fun dimension in global values
G-Interpersonal – The interpersonal dimension in global values
G-Personal – The personal dimension in global values
D-Fun – The fun dimension in domain-specific values
D-Interpersonal – The interpersonal dimension in domain-specific values
D-Personal – The personal dimension in domain-specific values
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process
Note: * $p<0.05$ ** $p<0.01$

Figure 6.7: The mediation of domain-specific values between global values, and attitude components

As shown in Figure 6.7, the personal and the interpersonal dimensions in global values had significant impact on the second-order factor of domain-specific interest, but the global fun value had no significant influence on the second-order factor. This is consistent with the results on relations between global values and domain-specific values in section 6.1.1. Moreover, the second-order factor of domain-specific interest had significant impacts on all the attitude components.

In order to test the mediation effect of domain-specific values, we opened up direct paths from the global value dimensions to the three attitude components. The model fit well, as shown in Table 6.7 (Model 2). Most of the direct paths were non-significant[8]. The results imply that the second-order factor of domain-specific interest fully mediated the influence from global values to the three attitude components. Therefore, H3b on the mediating role of domain-specific values was supported.

Table 6.7: Fit indices of models on the mediation role of domain-specific values between global values and attitude components

	Goodness of fit	Specifications
Model 1	Chi-square = 256.85 (df = 107) RMSEA = 0.062 NNFI = 0.97 CFI = 0.98 Standardized RMR= 0.051	Model in Figure 6.7
Model 2	Chi-square = 239.68 (df = 98) RMSEA = 0.063 NNFI = 0.97 CFI = 0.98 Standardized RMR= .048	Model in Figure 6.7 additionally includes direct paths from the global value dimensions to the three attitude components

All in all, the results suggest that domain-specific values play a much more important role in explaining variance in specific attitudes than the global values, and they also mediate fully the impact of the global values on attitudes. It implies that global values, while useful to some degree in a large number of settings, are almost never as predictive as are the more situation-

[8] Except for one path from the global fun values to Af, which was significant and positive (γ =0.16, t-value=2.19).

specific determinants. What may be required for better explanation and prediction of particular actions are domain-specific values rather than global values, per se.

6.1.5 Summary of findings

The major aim of this part is to explore the relationships among global values, domain-specific values in food prosumption, and attitude components (As, Af, and Ap). A measurement scale for domain-specific values in food prosumption was developed corresponding to the measure of global values. The results from the measurement models showed that three underlying dimensions emerged for both sets of values. Therefore, it is possible to examine the relationships among global values, domain-specific values, and attitudes along the three dimensions.

Our results show that two of the three dimensions (the interpersonal and personal dimensions) in global values significantly influenced their counterparts in domain-specific values; however, the fun dimension in global values had no significant impact on its corresponding dimension in domain-specific values. Further, for global values, the fun dimension had no influences on attitude components. The other two dimensions had significant impact on and explained a limited portion of variances in the attitude components.

The three dimensions in domain-specific values correlated highly with each other, so a second order-factor, labeled as domain-specific interest, was introduced to represent the three value dimensions in the structural equation models in order to overcome the problem of multi-colinearity. The introduction of a second-order factor made the model based on our empirical data slightly different from the original conceptual model. In the conceptual model, the three dimensions in domain-specific values had direct influence on the attitude components, as proposed in hypotheses H5a-5c. However, such a direct influence from domain-specific value dimensions to the attitude components did not exist in the empirical model shown in Figure 6.6. Instead, the second-order factor directly affected the attitude components. Although we can not directly test hypotheses H5a-H5c, the significant impact of the second-order factor on all attitude components gives us supporting evidences for these hypotheses.

Further, in the conceptual model the impacts of individual value dimensions on attitude components were also compared, as suggested in hypotheses H5d-H5f. However, it was

difficult to directly test such hypotheses based on our empirical model. Alternatively, we looked at the correlations among the three domain-specific value dimensions and the attitude components. Only attitude toward process (Ap) correlated significantly higher with the fun dimension than with the other dimension, which indicates support for hypothesis H5f.

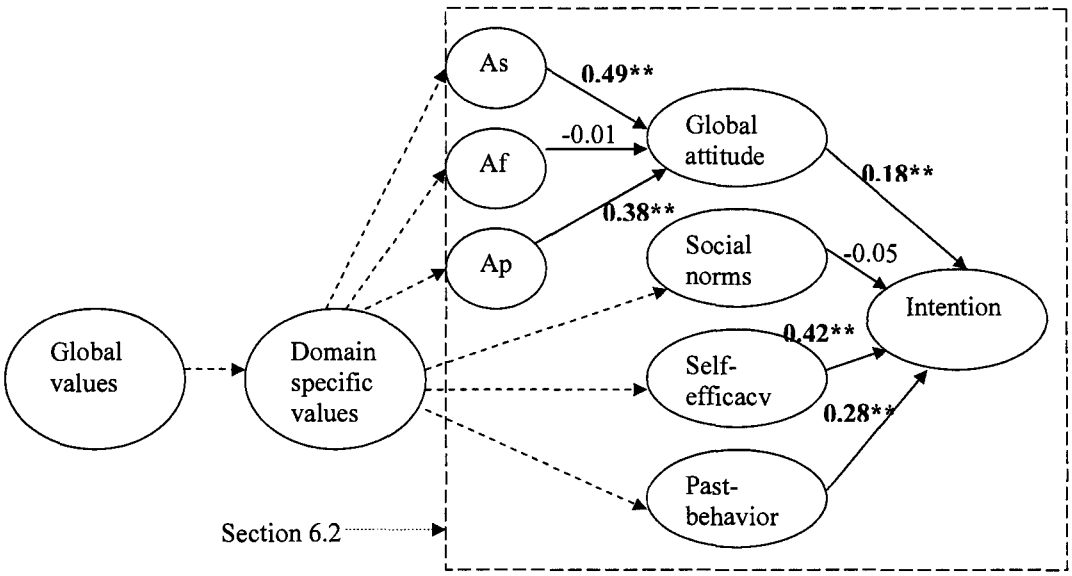
Moreover, our results show that domain-specific values explained more variance in the attitude components than global values, and they mediated the influences of global values on the attitude components. In sum, our findings showed that global values had limited ability to explain and predict specific attitudes and behaviors. Therefore, it is important to include domain-specific values in order to provide better explanation and prediction for behaviors in a specific domain.

6.2 The theory of trying

After testing out the relationships among global values, domain-specific values, and attitude components in food prosumption, we turn to the other building block of the conceptual model, the theory of trying. The primary objective of this section is to test the theory of trying in our empirical context of preparing a dinner for friends. We tested a structural model involving relationships among variables within the theory of trying, as shown by the model within the dashed rectangle in Figure 6.8. As discussed earlier, our model is a revised version of the original theory of trying. Outcome expectation for success and failure was removed; self-efficacy was introduced into the model instead. All the constructs are treated as endogenous constructs in the structural equation model. The model fit well, as shown by the fit indices in Table 6.8.

Table 6.8: Fit indices of the structural model of the relationships between domain-specific values and attitude components in food prosumption

	Goodness of fit	Specifications
Model	Chi-square = 242.80 (df = 81) RMSEA = 0.073 NNFI = 0.97 CFI = 0.98 Standardized RMR= 0.030	Including three dimensions in domain-specific values, a second-order factor of domain-specific values, and three attitude components



As - Attitude toward trying and succeeding

Af - Attitude toward trying and failing

Ap - Attitude toward the trying process

Note: * $p<0.05$ ** $p<0.01$

Figure 6.8: Hypotheses examined within the theory of trying

Supporting H4a, attitude toward trying and succeeding (As) influenced the global attitude significantly ($\beta = 0.49$, $p<0.0001$), as shown in Figure 6.8. Attitude toward the trying process (Ap) ($\beta = 0.38$, $p<0.0001$) also affected the global attitude significantly, which gives support to 4b. That is, positive reactions toward anticipated outcomes of succeeding (e.g. preparing a dinner for friends) lead to positive global attitude, so do positive reactions toward the process of food prosumption.

However, attitude toward trying and failing (Af) had no significant effect on the global attitude. So, H4c didn't receive empirical support. This is consistent with previous findings that attitude toward trying and failing did not significantly impact global attitude (Bagozzi and Warshaw 1990, Bagozzi and Kimmel 1995). Moreover, 53 percent of variance in the global attitude was explained by the three attitude components.

Furthermore, consistent with our prediction, the path from global attitude toward preparing a dinner for friends to intention was significant ($\beta = 0.18$, $p<0.01$). H4d is therefore supported.

Supporting H4f, self-efficacy had a positive and significant impact on intention (β = 0.42, $p<0.0001$). Past experiences in food prosumption also significantly influenced the intention to prosume (β = 0.28, $p<0.01$), which is consistent with H4g,. However, no significant effects of social norms were observed on intention to prepare a dinner for friends. So H4e didn't receive empirical support. In sum, intention to prepare a dinner for friends was significantly influenced by the global attitude, self-efficacy and past behavior.

Discussion

The results show that the revised model of the theory of trying received empirical support in our empirical context of preparing a dinner for friends. Consistent with past research (Bagozzi and Warshaw 1990, Bagozzi and Kimmel, 1995), attitude components As and Ap had significant influence on the global attitude; the global attitude had a significant impact on intention. Nevertheless, the magnitude of effects for the global attitude on intention was less than that in previous studies (Bagozzi and Kimmel, 1995, Ajzen 1991). Social norms did not significantly predict intentions, which concurred with previous studies. For instance, in 10 of 19 investigations summarized by Ajzen (1991), social norms failed to significantly predict intentions.

Self-efficacy had a strong and significant impact on intention. The result is also consistent with previous findings that the self-efficacy dimension of perceived behavioral control has a consistent, strong relationship with intention (Madden et al. 1992).

Further, past behavior significantly determined intentions, even after controlling for the effects of other antecedents. The original theory of trying distinguished the recency and frequency of past behavior. However, we treated recency and frequency as two dimension of past behavior in our model. Although previous studies (e.g., Bagozzi and Warshaw 1990) argue that recency should not be expected to affect intentions, our results shows recency correlates highly with frequency (0.70). It is possible that in our empirical context of food prosumption, individuals who had a long history of preparing dinner for friends would also invite friends for dinner recently and vice versa. Thus, recency influenced intention together with frequency of past behavior. Nevertheless, the magnitude of effects for past behavior on intention was less than that of self-efficacy.

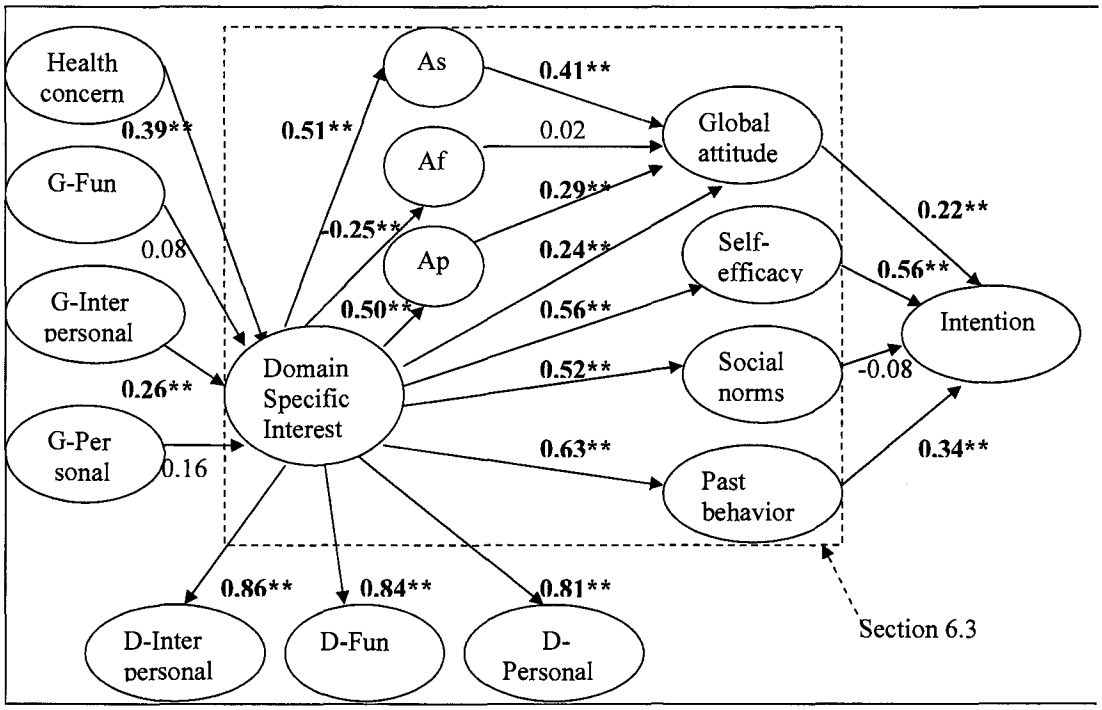
Additionally, it should be noted that there was a high correlation between past behavior and self-efficacy. Past experiences affect self-efficacy by influencing people's knowledge and skills. Familiarity with a task through past experiences will make required information more accessible, therefore it will enhance people's ability assessment. Further, as experiences with a task increase, even judgment about self-efficacy becomes more routine and automatic. That is, individuals may refer simply to their previous performance level and use that level as the primary determinant of self-efficacy (Gist 1989). On the other hand, the higher self-efficacy people have, the more likely that they have performed that behavior frequently before. In future studies, it would be interesting to see if past behavior and self-efficacy interact to influence intention.

Finally, attitudes, self-efficacy and past behavior fully mediated the effects of domain-specific values on intentions to prosume. This implies that domain-specific values influenced prosumption intention indirectly through these intervening variables.

To sum up, the results show that attitudes, self-efficacy, and past behavior were important predictors of people's prosumption intention when they prepare a dinner for friends. Self-efficacy especially had the strongest influences on prosumption intention than other antecedents had. Our results gave full support to the validity of the revised model of the theory of trying.

6.3 Relationships between domain-specific values and the theory of trying

In the two previous sections, we examined relationships between two sets of values and attitudes, and tested hypotheses within the theory of trying. In this section, we are going to connect these two parts of the conceptual model together. As shown in Figure 6.9, the complete model includes the three dimensions of global values (G-Fun, G-Interpersonal, G-Personal), health concern in food prosumption, domain-specific values in food prosumption with a second-order factor (D-Fun, D-Interpersonal, D-Personal, Domain-specific interest), and variables in the theory of trying. Global values and health concern in food prosumption have been treated as exogenous variables, domain-specific values and variables in theory of trying have been treated as endogenous constructs in the model. The structural model in Figure 6.9 fit well, as evidenced by the goodness-of-fit measures in Table 6.9.



G-Fun	– The fun dimension in global values
G-Interpersonal	– The interpersonal dimension in global values
G-Personal	– The personal dimension in global values
D-Fun	– The fun dimension in domain-specific values
D-Interpersonal	– The interpersonal dimension in domain-specific values
D-Personal	– The personal dimension in domain-specific values
As	– Attitude toward trying and succeeding
Af	– Attitude toward trying and failing
Ap	– Attitude toward the trying process

Note: * $p<0.05$ ** $p<0.01$

Figure 6.9: Hypotheses tested in section 6.3 - relationships between domain-specific values and antecedents of intention in the theory of trying

Table 6.9: Fit indices of the structural model of the whole model

	Goodness of fit	Specifications
Model	Chi-square = 815.38 (df = 363) RMSEA = 0.057 NNFI = 0.97 CFI = 0.98 Standardized RMR= 0.051	Including global values, domain-specific values, and the theory of trying

As shown in the complete model in Figure 6.9, the path coefficients within the theory of trying are similar to those in section 6.2. The relations among global values, domain-specific values, and attitude components are also similar to the results in section 6.1. The only difference is that health concern in food prosumption has been added as an antecedent of domain-specific values. It influenced domain-specific values significantly ($\beta = 0.39$, $p<0.0001$), which suggests that the more people want to eat healthily, the more likely they are to be interested in food prosumption in general. In this section, we focus on the influence of domain-specific values on antecedents of intentions in the theory of trying, which connects the values to the theory of trying.

The impact of domain-specific values on attitude components has been addressed in section 6.1.3. Similarly, as shown in Figure 6.9, the second-order factor of domain-specific interest had significant influence on As, Af and Ap. Furthermore, the second-order factor of domain-specific interest still had significant influence on the global attitude ($\beta = 0.24$, $p<0.0001$) even after controlling the mediation effects of As and Ap between domain-specific values and the global attitude. This implies that attitude components only partially mediated the impact of domain-specific values on the global attitude. Hypothesis H5g argued that the attitude components mediate the effects of domain-specific values on the global attitude; however the results only showed partial mediation.

Moreover, the second-order factor of domain-specific interest had significant influence on social norms toward preparing a dinner for friends ($\beta = 0.52$, $p<0.0001$). It also had a strong and significant impact on self-efficacy toward preparing a dinner for friends ($\beta = 0.56$, $p<0.0001$). Finally, we found that the second-order factor of domain-specific interest influenced past behavior significantly as well ($\beta = 0.63$, $p<0.0001$), which is consistent with H6d.

Discussion

The main purpose of this part is to investigate the influence of domain-specific values on antecedents of intention in the theory of trying. As discussed earlier, a second-order factor was introduced to represent the three dimensions in domain-specific values in order to overcome the problem of multi-colinearity, because the three dimensions correlated highly with each other.

The introduction of such a second-order factor made the empirical model slightly different from the original conceptual model. The hypothesized direct effects from the three dimensions in domain-specific values to intention antecedents (i.e., attitude components, social norms, self-efficacy, and past behavior) could not be tested directly. Instead, the second-order factor directly influenced those intention antecedents in the empirical model.

Our results show that the second-order factor of domain-specific interest had significant effects on all the antecedents of intention. First, the second-order factor affected both attitude components and the global attitude. Attitude components only partially mediate the impact of domain-specific values on the global attitude. This implies that although the three attitude components (As, Af, and Ap) represent different dimensions of the global attitude, they can't explain all variance in the global attitude. It is possible that in our empirical context of food prosumption, it is more common for people to form a global attitude toward food prosumption than to construct distinct attitudes towards the outcomes of food prosumption (e.g., As and Af) and the process itself (Ap). Second, the second-order factor of domain-specific interest had significant influence on other intention antecedents such as social norms, self-efficacy, and past behavior. Although we can not directly test hypotheses H6b and H6d, which suggest the direct influence from the value dimensions on self-efficacy and past behavior, the significant impact of the second-order factor on self-efficacy and past behavior gives us supporting evidence for these hypotheses. However, hypotheses that compare the impact of individual value dimensions on social norms (H6a) and on self-efficacy (H6c) can not be directly tested in the empirical model.

To sum up, the second-order factor of domain-specific interest had significant influence on all the antecedents of intentions in the theory of trying. The great predictability of domain-specific values suggests the utility of this construct. It implies that domain-specific values in one domain might function as the underlying motivational mechanism behind people's food prosumption behavior. This explains why people have different attitudes toward food prosumption, why they react differently to social pressure, and even why they feel capable or not of performing prosumption behavior. Of course, this argument is more of an exploratory nature, since no previous study has tried to find the common cause of all the antecedents of behavioral tendency.

Furthermore, domain-specific values operate at a level between general values and specific attributes. Our model on the relationships between domain-specific values and attitudes is between Rosenberg's attitude theory (1960) and Fishbein's attitude theory (1975). Rosenberg was particularly concerned with the general values of the individual and with how these general values related to the overall attitudes, while Fishbein's theory is much more situation-specific and deals with more stimulus-bound attributes. In other words, Rosenberg's theory deals with fairly central individual values, but Fishbein's theory operates at a level not so central to the individual's self-concept. Compared to these two models, domain-specific values in our model operate at a level between Rosenberg's central values and Fishbein's specific attributes. Therefore, domain-specific values have the advantage that they can predict attitudes towards a number of behaviors within one specific domain as general values do, and at the same time they remain capable of predicting the specific behavior in question.

Summary of the whole model

Finally, the model in Figure 6.9 also shows the complete picture of our empirical model. As we see, the interpersonal dimension in global values and health concern in food prosumption significantly influenced the second-order factor of domain-specific interest. The three dimensions in domain-specific values loaded highly and significantly on the second order factor, which had significant impact on attitude components and all the antecedents of prosumption intention. In addition, As and Ap affected the global attitude significantly. Finally, global attitude, self-efficacy, and past behavior influenced intention significantly.

Table 6.10: Explained variance in variables in the whole model

	Domain Specific Interest	As	Af	Ap	Global Attitude	Social Norms	Self-Efficacy	Past behavior	Intention
Explained Variance	0.45	0.27	0.06	0.27	0.57	0.27	0.31	0.40	0.55

Note: As – Attitude toward trying and succeeding Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

As shown in Table 6.10, 45 percent of variance in the second-order factor of domain-specific interest is explained by global values and health concern in food prosumption; 57 percent of variance in the global attitude is explained by the domain-specific values and attitude components; and 55 percent of variance in prosumption intention is explained by the whole model.

6.4 Situation difference

In the previous sections, our comprehensive theoretical model was tested and received empirical support in the situation of preparing a dinner for friends in the Norwegian sample. However, it is of interest to see if the model holds in another situation, such as preparing a dinner for oneself, or even in other samples from a different culture. Since validating the entire model across situations and cultures is out of the range of the current study, we would like to take the first step, to test one part of our conceptual model, the theory of trying, across situations and cultures. As mentioned in the beginning of this chapter, Section 6.4 investigates the impact of situation difference on the predictability of the theory of trying; Section 6.5 cross culturally validates the model in two different situations.

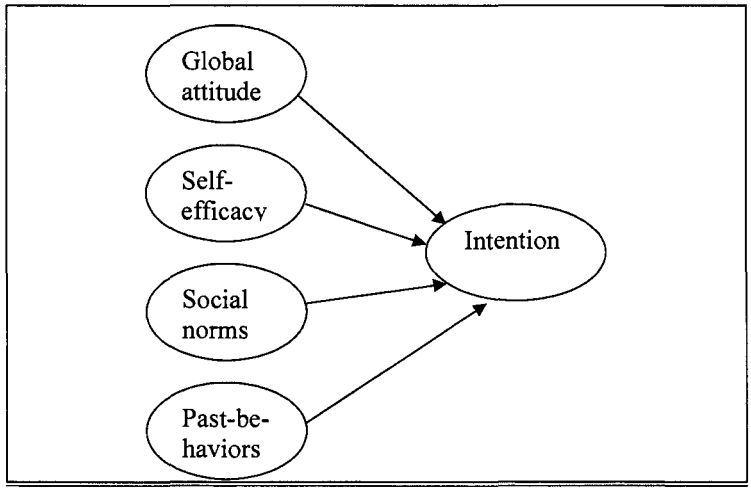
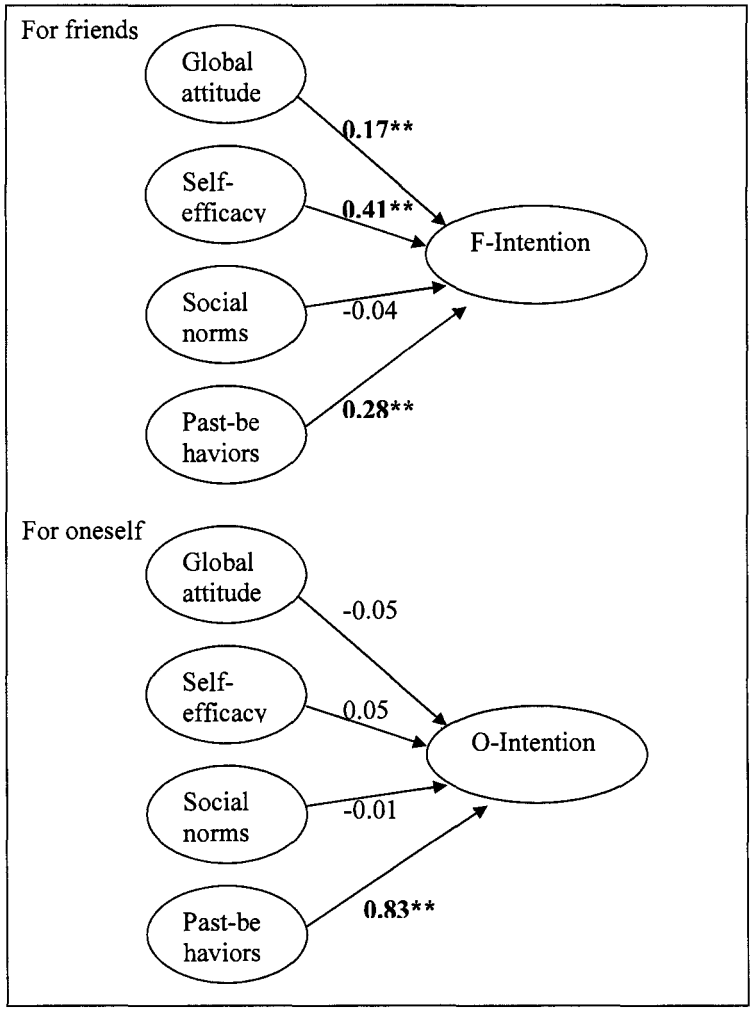


Figure 6.10: The simple version of the theory of trying

A simple version of the theory of trying will be tested in another situation of food prosumption and in other samples. As shown in Figure 6.10, in this simple version the antecedents of intention are the global attitude, self-efficacy, social norms, and past behavior. The three attitude components have been excluded for the reason of simplicity.

In this section, we examine whether the simple model of the theory of trying shown in Figure 6.10 will predict differently in two dissimilar situations of food prosumption in the Norwegian sample. Because each subject answered questions under both situations in the questionnaire, we have included the simple model of the theory of trying for both situations in one model.

The structural equation model in Figure 6.11 fit the data very well as evidenced by the goodness-of-fit indices in Table 6.11.



F-Intention – Intention to prepare a dinner for friends

O-Intention – Intention to prepare a dinner for oneself

Note: * $p<0.05$ ** $p<0.01$

Figure 6.11: The simple version of the theory of trying: preparing a dinner for friends vs. preparing a dinner for oneself (for Norwegians)

Table 6.11: Fit indices of the simple version of the theory of trying with both situations

	Goodness of fit	Specifications
Model	Chi-square = 358.36 (df = 174) RMSEA = 0.053 NNFI = 0.98 CFI = 0.98 Standardized RMR= 0.032	Including the simple model of the theory of trying for both situations

As we seen in Figure 6.11, in the situation of preparing a dinner for friends, intention was significantly influenced by the global attitude (γ = 0.17, $p<0.001$), self-efficacy (γ = 0.41, $p<0.0001$), and past behavior (γ = 0.28, $p<0.001$). Social norms had a non-significant effect on intention to prepare a dinner for friends. About 54 percent of variance in intention to prepare a dinner for friends was explained by its antecedents. The result is similar to that of the theory of trying in Section 6.2.

However, the simple model predicts differently in the situation of preparing a dinner for oneself. Only past behavior significantly influenced the intention to prepare a dinner for oneself (γ = 0.83, $p<0.0001$). The paths from other antecedents to intention were non-significant. 67 percent of variance in intention to prepare a dinner for oneself was explained by its antecedents.

Discussion

Our results show that the situations of food prosumption did matter. The simple model of the theory of trying predicted differently in two different situations. In the situation of preparing a dinner for oneself, the global attitude had no significant effect on intention. This may have been due to the automatic, unthinking reactions of habitual behavior based on past experiences. Alternatively, it is possible that the non-significant effect was because of the problem of multi-colinearity. There was a high correlation between the global attitude and past behavior (0.62). When past behavior is a strong predictor of intention, the impact of a weaker predictor such as the global attitude may become non-significant.

People have higher self-efficacy when they prepare a dinner for themselves than they do when preparing for friends; however, self-efficacy had no significant impact on intention in the situation of preparing a dinner for oneself. This concurred with previous research that

perceived behavioral control might not be a major predictor of behavior when perceived behavioral control high (Madden et al. 1992).

Past behavior was the only significant predictor of intention in the situation of preparing a dinner for oneself. Intention becomes the results of prior actions. This implies that people may not form intentions clearly and fully when they prepare a dinner for themselves. In other words, preparing a dinner for oneself is more a habitual behavior. When people perform a habitual behavior, they are less likely to form a complete intention; such incompletely formed intentions may leave the way open for automatic, unthinking reactions based on past behavior (Bagozzi and Warshaw 1990).

Further analyses

Furthermore, we also compared the mean for each variable (for instance, the average of all self-efficacy items), as shown in Table 6.12. The table shows Norwegians had a more positive attitude toward preparing a dinner for friends than for themselves; however, they had significantly lower self-efficacy when they prepared a dinner for friends than for themselves. People also prepare a dinner for themselves more frequently and more recently than they do for friends. There was no significant difference in perceived social pressure in both situations. Finally, people had higher intention to prepare a dinner for friends than for themselves.

Table 6.12: Mean comparison of variables in the simple version of the theory of trying in two situations of food prosumption

	Global Attitude	Social Norms	Self-Efficacy	Past behavior	Intention
For friends	5.92	4.86	6.06	4.71	5.87
For oneself	4.98	4.88	6.53	5.28	5.47
t-value	10.44	-0.19	-10.24	-3.90	4.59

To obtain further support for the validity of the model, we conducted another test. We opened up direct paths from the F-intention's antecedents (i.e., attitudes, social norms, self-efficacy and past behavior in the situation of preparing a dinner for friends) to the O-intention (i.e., intention in the situation of preparing a dinner for oneself), and vice versa. The structural equation model fit well as shown in Table 6.13. As expected, all the new, direct paths added

in this model were non-significant, providing additional evidence for the robustness of the proposed model in Figure 6.11.

Table 6.13: Fit indices of the simple version of the theory of trying with both situations (with new, direct paths)

	Goodness of fit	Specifications
Model	Chi-square = 342.36 (df = 166) RMSEA = 0.053 NNFI = 0.98 CFI = 0.98 Standardized RMR= 0.030	Including the simple model of the theory of trying for both situations, with new, direct paths

Finally, we also applied the principle of multi-group analysis[9] to test the within-subject situation differences in one group. See more detail for this analysis in Appendix H.

As shown in Table 6.14, the results of the invariance test of path coefficients show that the global attitude, self-efficacy, and past behavior significantly predicted intention differently in the two situations. The global attitude and self-efficacy predicted intention significantly in the situation of preparing a dinner for friends, but not significantly in the situation of preparing a dinner for oneself. Past behavior was a significant predictor of intention in both situations, but its impact was significantly stronger in the situation of preparing a dinner for oneself than for friends. However, social norms had non-significant effects on intention in both situations, which is invariant across situations.

Table 6.14: Test of invariance of path coefficients across the two situations

Baseline model* (partially invariant factor loading): $\chi^2(178)=361.57$		
Global attitudes	Equal path 1: EQ GA 1 1 GA 2 5*	$\chi^2=371.02$, $\Delta\chi^2(1)=9.45 > 3.84$
Self-efficacy	Equal path 2: EQ GA 1 2 GA 2 6	$\chi^2=386.93$, $\Delta\chi^2(1)=25.36 > 3.84$
Social norms	Equal path 3: EQ GA 1 3 GA 2 7	$\chi^2=361.76$, $\Delta\chi^2(1)=0.19 < 3.84$
Frequency	Equal path 4: EQ GA 1 4 GA 2 8	$\chi^2=391.39$, $\Delta\chi^2(1)=29.82 > 3.84$

Note: Baseline model * - The model contains factor loadings partially invariant across samples.
Equal path 1: EQ GA 1 1 GA 2 5* - In the model, the path coefficient from the global attitude to intention was constrained to be equal for both situations, then a chi-square difference test was applied to compare the chi-squares for this model to the factor loading partially invariant model (baseline model).

[9] The procedure of multi-group analysis will be discussed in more detail in section 6.5 on cultural variation.

6.5 Cultural variation: Multi-group analyses

In this section, a multi-group analysis will be conducted to test the generality of the simple model[10] of the theory of trying in two samples from different cultures, the Norwegian sample and the Chinese sample. We ran a multi-group analysis for both situations of food prosumption, as shown in Table 6.1. Chi-square difference tests were used to test hypotheses concerning the equivalence of models and parameters in the two samples. Before we turn to the results, we first briefly review the procedure to conduct a multi-group analysis in structural equation modeling.

A multi-group approach

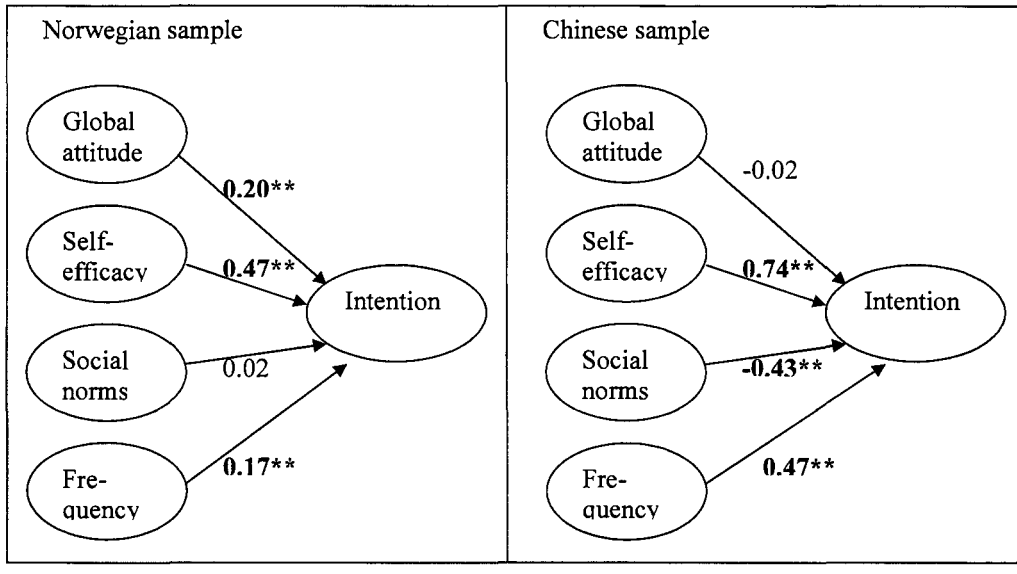
The normal procedure to examine invariance constraints across samples is as follows (Joreskog and Sorbom 1989). First, a test is performed of the equality of variance-covariance matrices across samples. Rejection of the hypothesis of the equality of variance-covariance matrices sets the stage for investigation of specific differences between the samples. Second, we need to test whether the same factor structure exists for the samples. A satisfactory fit of a multiple sample analysis implies that the identical factors are reasonable representations of the data in both samples.

Third, we test whether the factor loadings are equal across samples. This is done with a chi-square difference test comparing the chi-squares for the equal factor loading model to the equal factor pattern model. When the test of invariance for factor loading treated as a full set is rejected, it is desirable to test for "partial invariance" of factor loading (Bagozzi and Edwards 1998). This implies examining the invariance of individual loading to pinpoint which ones are invariant and which ones are not. At least one factor loading per factor should be invariant in order to conclude a reasonable degree of correspondence between factors and measures has been achieved across groups. Finally, after establishing at least partial invariance of factor loadings, one can continue to test for invariance of path coefficients among latent variables.

[10] In this model, only the frequency of past behavior is included, because for the Chinese sample, recency and frequency of past behavior had low correlation. Thus, we chose only frequency for both samples for the reason of simplicity.

6.5.1 The situation of preparing a dinner for friends

We applied the aforementioned procedure of multi-group analysis in the situation of preparing a dinner for friends. First, a simple version of the theory of trying was run separately for each sample, as shown in Figure 6.12. The results show that the simple model predicted differently for Norwegians and for Chinese. Attitudes, self-efficacy, and frequency of past behavior had significant effects on intention for Norwegians. However, social norms, self-efficacy and frequency were important predictors of intention for Chinese.



Note: * p<0.05 ** p<0.01

Figure 6.12: Prepare a dinner for friends in the Norwegian sample vs. in the Chinese sample (Two separate models)

We needed to test the difference shown in Figure 6.12 more rigidly by applying a multi-group analysis. The results of the multi-group analysis are presented in Table 6.15, Table 6.16, and Table 6.17.

The findings for tests of invariance of parameters across the two samples are shown in Table 6.15. The first row (M1) indicates that the same factor pattern existed for both the Norwegian sample and the Chinese sample. That is, the five factors shown in Figure 6.12 fit the data satisfactorily for both Norwegian and Chinese: χ^2 (54) =129.52, CFI =0.98, NNFI=0.99, RMSEA=0.062. However, the hypothesis of equal factor loading in a full set

was rejected (M2). A chi-square difference test was applied to compare the chi-squares for the equal factor loading model (M2) to the equal factor pattern model (M1): χ^2 (59) =149.20, $\Delta\chi^2$ (5) =19.68, (P<0.01).

Table 6.15: Tests of invariance of parameters across cultures for the situation of preparing a dinner for friends

Model	Goodness of Fit	Test of hypotheses
M1: Baseline model* (equal factor pattern)	χ^2 (54) =129.52, CFI =0.98, NNFI=0.99, RMSEA=0.062	
M2: Factor loading invariant*	χ^2(59)=149.20, $\Delta\chi^2$ (5)=19.68, P<0.01	Rejected

Note: M1: Baseline model*- In this model, the same factor structure was constrained for both samples.
M2: Factor loading invariant* - In this model, the factor loadings of all the factors were constrained to be equal for both samples.

Then, we tested for "partial invariance" of factor loadings by testing the invariance of factor loading one-by-one. The results are shown in Table 6.16. The chi-square difference tests show that the global attitude and self-efficacy had one factor loading invariant, but social norms had no factor loading invariant across samples. Therefore, partial invariance of factor loadings for attitude and self-efficacy were established. Then, we continue to test for invariance of path coefficients among latent variables.

Table 6.16: Test of partial invariance of factor loading across cultures for the situation of preparing a dinner for friends

Baseline model (M1)*: χ^2 equal factor pattern: χ^2=129.52 (df = 54)		
Global attitude	Equal item 1: EQ LX 2 1*	χ^2=136.10,$\Delta\chi^2$ **(1) = 6.58 > 3.84**
	Equal item 2: EQ LX 3 1	χ^2=129.64, $\Delta\chi^2$ (1) = 0.12 < 3.84
Self-efficacy	Equal item 1: EQ LX 5 2,	χ^2=133.96, $\Delta\chi^2$ **(1) = 4.44 > 3.84**
	Equal item 2: EQ LX 6 2	χ^2=129.60, $\Delta\chi^2$ (1) = 0.08 < 3.84
Social norms	Equal item 1: EQ LX 8 3	χ^2=133.94, $\Delta\chi^2$ **(1) = 4.42 > 3.84**

Note: Baseline model (M1)* - In this model, the same factor structure was constrained for both samples.
Equal item 1: EQ LX 2 1* - In the model, the factor loading of Item 1 measuring the global attitude was constrained to be equal for both samples, then a chi-square difference test was applied to compare the chi-squares for this model to the equal factor pattern model (M1)

Table 6.17 shows the results of invariance tests of path coefficients among latent variables. As shown by the chi-square difference tests, only the path coefficient from self-efficacy to intention was invariant across samples in the situation of preparing a dinner for friends. The

global attitude had significant effect on intention in the Norwegian sample, but not in the Chinese sample. The effects of frequency of past behavior were significant in both samples, but stronger for Chinese than for Norwegians. The influence of social norms was non-significant for Norwegians; however, the path coefficient was negative and significant for Chinese. The negative coefficient of social norms may have been due to the multi-colinearity, since self-efficacy and social norms correlated highly. We will discuss this in more detail in the following discussion.

Table 6.17: Test of partial invariance of path coefficient across cultures for the situation of preparing a dinner for friends

Baseline model (M3)*: EQ LX 3 1 LX 6 2, $\chi^2(56)= 129.73$		
Global attitude	Equal path 1: EQ GA 1 1*	$\chi^2=137.76$, $\Delta\chi^2$ **(1) =8.03 > 3.84**
Self-efficacy	Equal path 2: EQ GA 1 2	$\chi^2=131.87$, $\Delta\chi^2$ (1) =2.14 < 3.84
Social norms	Equal path 3: EQ GA 1 3	$\chi^2=143.19$, $\Delta\chi^2$ **(1) =13.46 > 3.84**
Frequency	Equal path 4: EQ GA 1 4	$\chi^2=136.43$, $\Delta\chi^2$ **(1) = 6.70 > 3.84**

Note: Baseline model (M3)* - The model contains factor loadings partially invariant across samples; both the global attitude and self-efficacy had one item constrained invariant across samples.
Equal path 1: EQ GA 1 1* - In the model, the path coefficient from the global attitude to intention was constrained to be equal for both samples, then a chi-square difference test was applied to compare the chi-squares for this model to the factor loading partially invariant model (M3)

Discussion

The results of the multi-group analysis show that the theory of trying predicted differently for Norwegians and Chinese in the situation of preparing a dinner for friends. In the Norwegian sample, attitude, self-efficacy, and frequency of past behavior had significant effects on intention. However, social norms, self-efficacy, and frequency were important predictors of intention for Chinese.

Attitudes were not important in predicting intention in the Chinese sample. This is consistent with previous studies that social norms could be more important than attitudes to predict behavior in countries with a collective culture, such as China, than in countries with an individual culture such as Norway (Davidson et al. 1976, Han and Shavitt 1994). The correlations between intention and attitudes, between intention and social norms further supported such arguments. As shown in Table 6.18, intention correlated significantly higher with attitudes (0.55) than with social norms (0.40) for Norwegians. However, for Chinese, the

correlation between intention and attitudes (0.39) was not significantly different from that of intention and social norms (0.43), as shown in Table 6.19.

Table 6.18: Correlations among latent variables in the theory of trying for Norwegian sample in the situation of preparing a dinner for friends

	Intention	Global attitude	Self-efficacy	Social norms	Frequency
Intention	1.00				
Global attitude	**0.55** (0.04)	1.00			
Self-efficacy	0.69 (0.03)	0.56 (0.04)	1.00		
Social norms	**0.40** (0.05)	0.35 (0.05)	0.46 (0.05)	1.00	
Frequency	0.55 (0.04)	0.47 (0.04)	0.59 (0.04)	0.56 (0.04)	1.00

Note: Standard errors in parentheses

Table 6.19: Correlations among latent variables in the theory of trying for Chinese sample in the situation of preparing a dinner for friends

	Intention	Global attitude	Self-efficacy	Social norms	Frequency
Intention	1.00				
Global attitude	**0.39** (0.05)	1.00			
Self-efficacy	0.71 (0.04)	0.54 (0.05)	1.00		
Social norms	**0.43** (0.06)	0.36 (0.06)	**0.82** (0.04)	1.00	
Frequency	0.75 (0.02)	0.36 (0.05)	0.70 (0.04)	0.54 (0.05)	1.00

Note: Standard errors in parentheses

Moreover, we argue that the negative and significant path coefficient from social norms to intention in the Chinese sample was possible due to high correlation between self-efficacy and social norms (0.82). Such a high correlation between self-efficacy and social norms for Chinese is interesting. It is possible that the construct of self-efficacy measured something that was more group-based in the Chinese sample. Self-efficacy is developed in the individualistic tradition with the presumption that an individual is responsible for his/her ability to perform one certain behavior. However, in a collective society such as China, it is more likely that a social group is responsible for an individual's ability to perform a behavior. For instance, when Chinese respondents consider their ability to prepare a dinner for friends, it is natural for them to include the possible help or assistance they could get from other family members or friends. So the measure of self-efficacy may contain some social elements for Chinese respondents, which possibly explains the high correlation between self-efficacy and social norms in the Chinese sample.

The effects of frequency of past behavior on prosumption intention are stronger for Chinese than for Norwegian. It indicates that preparing a dinner for friends is more a habitual behavior for Chinese than for Norwegians.

Comparison of structural means

The aforementioned tests address goodness of fit of the models and the psychometric properties of key parameters and their generalizability. The parameters are relational criteria. However, it is also interesting to examine the mean difference between the Norwegian sample and the Chinese sample in this specific situation. The structured means procedure is useful in this regard and it is described in Joreskog and Sorbom (1989, P. 245-253). Briefly, by introducing intercepts for each measurement, it is possible to estimate differences in means for factors across groups. We compared the structural means for the Norwegian sample and the Chinese sample in the situation of preparing a dinner for friends. The analyses were based on the two measurement models for the models in Figure 6.12. The results are shown in Table 6.20.

Table 6.20: Structure means for the Chinese sample (compared to the Norwegian sample) in the situation of preparing a dinner for friends

	C-Global Attitude	C-Self Efficacy	C-Social Norms	C-Frequency	C-Intention
Structure means	0.07*	-0.64	-0.04	0.46	-0.57
t -value	0.69	7.89	-0.33	3.40	-4.98

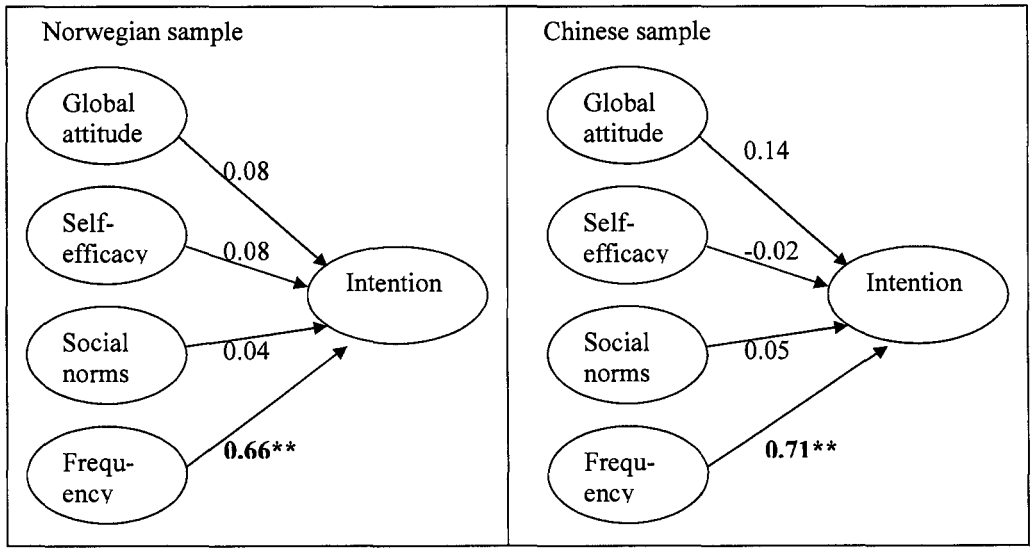
Note: * The value of structure means = (Structure means for Chinese – Structure means for Norwegian)

As we see in Table 6.20, there was no significant difference in attitude and social norms in the two samples. Chinese prepare a dinner for friends more frequently than Norwegians do. However, self-efficacy of the Chinese sample was significantly lower than that of the Norwegian sample. This is an interesting result. We could expect that Chinese would have higher self-efficacy since they prepare a dinner more frequently. A possible explanation is socially desirable responding (Lalwani et al. 2004). Chinese are more likely to misrepresent their self-reported actions in order to appear more normatively appropriate as collectivists. Since it is appropriate to be humble in Chinese culture, Chinese subjects reported self-efficacy relatively lower. On the other hand, Norwegians are more likely to see themselves in a positive light and give an inflated assessment of their skills and abilities as individualists.

Finally, the intention to prepare a dinner for friends in the Chinese sample was significant lower than that in the Norwegian sample.

6.5.2 The situation of preparing a dinner for oneself

A similar procedure of the multi-group analysis was applied to both samples in the situation of preparing a dinner for oneself. First, the simple model of the theory of trying was run separately for each sample, as shown in Figure 6.13. As we can see, only frequency of past behavior had significant effect on intention for both Norwegian and Chinese in this situation.



Note: * p<0.05 ** p<0.01

Figure 6.13: Preparing a dinner for oneself in the Norwegian sample vs. in the Chinese sample (Two separate models)

We further applied the multi-group analysis to test the generality of the theory of trying in this situation. The results are shown in Table 6.21, Table 6.22, and Table 6.23.

Table 6.21 shows the findings for tests of invariance of parameters across the Norwegian sample and the Chinese sample in the situation of preparing a dinner for oneself. The first row indicates that the factor pattern was the same for Norwegian and Chinese (M1), since the five factors shown in Figure 6.13 fit the data satisfactorily for Norwegian and Chinese: χ^2 (54)

=108.63, CFI =0.98, NNFI=0.99, RMSEA=0.05. Next, it can be seen that the hypothesis of equal factor loading in a full set was rejected (M3): χ^2 (59) =149.20, $\Delta\chi^2$ (5) =59.68 (P<0.01). Thus, we tested for "partial invariance" of factor loadings by testing the invariance of factor loading one-by-one.

Table 6.21: Tests of invariance of parameters across cultures for the situation of preparing a dinner for oneself

Model	Goodness of Fit	Test of hypotheses
M1: Baseline model* (equal factor pattern)	χ^2 (54) =108.63, CFI =0.98, NNFI=0.99 RMSEA=0.05	
M2: Factor loading invariant*	χ^2(59)=168.31, $\Delta\chi^2$ (5)=59.68, P<0.01	Rejected

Note: M1: Baseline model*- In this model, the same factor structure was constrained for both samples.
M2: Factor loading invariant* - In this model, the factor loadings of all the factors were constrained to be equal for both samples.

As shown in Table 6.22, the chi-square tests show that self-efficacy and social norms had one factor loading invariant each, but the attitude had no factor loading invariant across samples. So, partial invariance of factor loadings for self-efficacy and social norms was established. Then, we continued to test for invariance of path coefficients among latent variables.

Table 6.22: Test of partial invariance of factor loadings across cultures for the situation of preparing a dinner for oneself

Baseline model (M1)*: χ^2 equal factor pattern: χ^2=108.63 (df = 54)		
Global attitude	Equal item 1: EQ LX 2 1*	χ^2=144.57, $\Delta\chi^2$ **(1) =35.94 > 3.84**
	Equal item 2: EQ LX 3 1	χ^2=137.59, $\Delta\chi^2$ **(1) =28.96 > 3.84**
Self-efficacy	Equal item 1: EQ LX 5 2,	χ^2=124.06, $\Delta\chi^2$ **(1) =15.43 > 3.84**
	Equal item 2: EQ LX 6 2	χ^2=110.18, $\Delta\chi^2$ (1) =1.55 < 3.84
Social norms	Equal item 1: EQ LX 8 3	χ^2=110.29, $\Delta\chi^2$ (1) =1.66 < 3.84

Note: Baseline model (M1)* - In this model, the same factor structure was constrained for both samples.
Equal item 1: EQ LX 2 1* - In the model, the factor loading of Item 1 measuring the global attitude was constrained to be equal for both samples, then a chi-square difference test was applied to compare the chi-squares for this model to the equal factor pattern model (M1)

As shown in Table 6.23, the results of invariance tests of path coefficients among latent variables show that all path coefficients from antecedents of intention to intention were invariant across the two samples, even though the global attitude did not achieve the requirement of "partial invariance" of factor loadings.

Table 6.23: Test of invariance of path coefficients across cultures for the situation of preparing a dinner for oneself

Baseline model (M3)*: EQ LX 6 2 LX 8 3, $\chi^2(56)=111.94$		
Global attitudes	Equal path 1: EQ GA 1 1*	$\chi^2=111.99$, $\Delta\chi^2(1)=0.05 < 3.84$
Self-efficacy	Equal path 2: EQ GA 1 2	$\chi^2=114.02$, $\Delta\chi^2(1)=2.08 < 3.84$
Social norms	Equal path 3: EQ GA 1 3	$\chi^2=112.01$, $\Delta\chi^2(1)=0.07 < 3.84$
Frequency	Equal path 4: EQ GA 1 4	$\chi^2=112.14$, $\Delta\chi^2(1)=0.20 < 3.84$

Note: Baseline model (M3)* - The model contains factor loadings partially invariant across samples; both the global attitude and self-efficacy had one item constrained invariant across samples.
Equal path 1: EQ GA 1 1* - In the model, the path coefficient from the global attitude to intention was constrained to be equal for both samples, then a chi-square difference test was applied to compare the chi-squares for this model to the factor loading partially invariant model (M3)

Discussion

The results show that the theory of trying had a similar prediction for Norwegians and Chinese in the situation of preparing a dinner for oneself. Only frequency of past behavior mattered in prediction of intention. This further cross-culturally validates the argument that preparing a dinner for oneself is a behavior mainly driven by habit.

As shown in the correlation tables below, intention also correlated higher with social norms (0.39) for Chinese than for Norwegians (0.24) when people prepare a dinner for themselves. In addition, self-efficacy also correlated relatively highly with social norms (0.67) for Chinese. The results on correlations were similar to those in the situation of preparing a dinner for friends.

Table 6.24: Correlations among latent variables in the theory of trying for Norwegian sample in the situation of preparing a dinner for oneself

	Intention	Global attitude	Self-efficacy	Social norms	Frequency
Intention	1.00				
Global attitude	**0.48** (0.04)	1.00			
Self-efficacy	0.29 (0.05)	0.17 (0.05)	1.00		
Social norms	**0.24** (0.05)	0.13 (0.06)	0.25 (0.06)	1.00	
Frequency	0.74 (0.02)	0.57 (0.04)	0.28 (0.05)	0.25 (0.05)	1.00

Note: Standard errors in parentheses

Table 6.25: Correlations among latent variables in the theory of trying for Chinese sample in the situation of preparing a dinner for oneself

	Intention	Global attitude	Self-efficacy	Social norms	Frequency
Intention	1.00				
Global attitude	**0.48** (0.04)	1.00			
Self-efficacy	0.53 (0.05)	0.46 (0.05)	1.00		
Social norms	**0.39** (0.07)	0.32 (0.07)	**0.67** (0.07)	1.00	
Frequency	0.79 (0.02)	0.46 (0.04)	0.63 (0.04)	0.43 (0.07)	1.00

Note: Standard errors in parentheses

Comparison of structural means

We compared the structural means for the two measurement models in this situation. As we see in Table 6.26, Chinese scored significantly lower than Norwegian for all variables. Difference in intention to prosume was significant.

Since the structure model was the same for both samples in this situation, we also compared the structural means for the two structural models. The results are shown in Table 6.27. The difference in intention was no longer significant. This implies that the difference in intention between Norwegians and Chinese disappears when the explanatory structure is taken into consideration.

Table 6.26: Structure means for Chinese sample in the situation of preparing a dinner for oneself (measurement models)

	C-Global Attitude	C-Self Efficacy	C- Social Norms	C-Frequency	C-Intention
Structure means	-0.33*	-1.13	-0.48	-0.34	-0.49
T-value	-2.32	-13.43	-3.89	-2.44	-3.62

Note: * The value of structure means = (Structure means for Chinese – Structure means for Norwegian)

Table 6.27: Structure means for Chinese sample in the situation of preparing a dinner for oneself (structural models)

	C-Global Attitude	C-Self Efficacy	C- Social Norms	C-Frequency	C-Intention
Structure means	-0.32*	-1.13	-0.48	-0.34	-0.12
T-value	-2.32	-13.42	-3.90	-2.44	-1.14

Note: * The value of structure means = (Structure means for Chinese – Structure means for Norwegian)

General discussion

In conclusion, the results of the multi-group analyses suggest that the simple model of the theory of trying predicted differently for Norwegian and for Chinese in the situation of preparing a dinner for friends. Attitudes are important for Norwegians, however, social norms influence Chinese intentions to prosume. Self-efficacy is important for both Norwegians and Chinese. However, preparing a dinner for friends was more habitual for Chinese than for Norwegians. On the other hand, the model predicted similarly for the two samples in the situation of preparing a dinner for oneself. In such a situation, food prosumption is a habitual behavior for both Norwegians and Chinese. Only past behavior was the significant predictor of intention to prosume.

6.6 Summary of hypotheses testing

Hypotheses on relationships among global values, domain	Hypotheses testing
H1: The interpersonal dimension of global values has strong influence on the interpersonal dimension of domain-specific values in food prosumption.	Supported
H2a: The three dimensions in global values will have positive influences on As.	Partially supported
H2b: The three dimensions in global values will have negative influences on Af.	Partially supported
H2c: The three dimensions in global values will have positive influences on Ap.	Partially supported
H3a: Domain-specific values will explain more variance in attitude components toward preparing a dinner for friends than global values do.	Supported
H3b: Domain-specific values will mediate the influence of global values on attitude components toward preparing a dinner for friends.	Supported

Hypotheses on relationships among variables within the theory of trying	Hypotheses testing
H4a: Attitude toward trying to prepare a dinner for friends and succeeding (As) will have positive influences on global attitude toward preparing a dinner for friends (Ag).	Supported
H4b: Attitude toward the food prosumption process (Ap) will have positive influences on global attitude (Ag).	Supported
H4c: Attitude toward trying to prepare a dinner for friends and failing (Af) will have a negative influence on global attitude (Ag).	Not supported
H4d: The global attitude toward preparing a dinner for friends (Ag) will have positive influences on intention to prepare a dinner for friends.	Supported
H4e: Social norms toward preparing a dinner for friends will have a positive influence on people's intention to do so.	Not supported
H4f: Self-efficacy toward preparing a dinner for friends will have a positive influence on people's intention to do so.	Supported
H4g: Past behavior will have a positive influence on people's intention to prepare a dinner for friends.	Supported

Hypotheses on relationships between domain-specific values and the theory of trying	Hypotheses testing
H5a: The three dimensions in domain-specific values will have positive influences on As.	Indication of support
H5b: The three dimensions in domain-specific values will have negative influences on Af.	Indication of support
H5c: The three dimensions in domain-specific values will have positive influences on Ap.	Indication of support
H5d: The interpersonal and personal dimensions will have stronger influences on As than the fun dimension.	Not supported
H5e: The interpersonal and personal dimension will have stronger influence on Af than other two dimensions.	Not supported
H5f: The fun dimension will have stronger influence on Ap than the other two dimensions.	Indication of support
H5g: As, Af, Ap will mediate the impacts of domain-specific values in food prosumption on Ag.	Partially supported
H6a: The interpersonal dimension in domain-specific values will have stronger influence on social norms than the other two dimensions.	Can be tested directly
H6b: The three dimensions in domain-specific values will have positive influences on self-efficacy.	Indication of support
H6c: The fun dimension will have stronger influence on self-efficacy than the other two dimensions.	Can be tested directly
H6d: The three dimensions in domain-specific values will have positive effect on past experiences of preparing a dinner for friends.	Indication of support

Chapter 7 General discussion and implications

This chapter discusses the findings of the current study as a whole. The chapter is organized in the following way. In Section 7.1, important findings are summed up and discussed. In Section 7.2, the theoretical contributions of the study are presented and some managerial implications are suggested. Section 7.3 addresses the limitations of the present research. Lastly, in Section 7.4, some recommendations for future research are presented.

7. 1 Summary of research and discussion

This study provides a general theoretical framework about how to explore the phenomenon of prosumption. Based on established theories, the model proposed in this study is aimed at providing a starting point for future empirical research on all types of prosumption behavior, including food prosumption. A comprehensive model that included global values, domain-specific values in food prosumption, and the theory of trying was tested in the situation of preparing a dinner for friends in the Norwegian sample.

To begin with, the focus on the influence flow from global values to domain-specific values and then to specific attitudes and behavior allowed a better prediction of people's prosumption tendency in a certain domain such as food prosumption, and allowed an investigation of motivations behind such prosumption tendency. Moreover, the impact of domain-specific values on antecedents of behavior intentions such as attitudes, self-efficacy, social norms, and past behavior supported the proposition that domain-specific values are the powerful explanatory factors behind people's prosumption tendency. The hypothesized effects of attitudes, self-efficacy, and past behavior on prosumption intentions occurred as predicted.

Furthermore, we examined the predictability of the theory of trying in another situation of food prosumption, preparing a dinner for oneself. The results show that food prosumption was habitual in such a situation. Finally, a cross-cultural validation of generality of the theory of trying was conducted across two samples with different cultures. The results show that the

model predicted differently for Norwegians and Chinese in the situation of preparing a dinner for friends, but similarly in the situation of preparing a dinner for oneself.

The influence flow from global values to domain-specific values and to attitudes

Conceptually, this research was based on the premise that the global values people hold guide their behaviors across situations or even in specific situations. Additionally, reviewing research on the effects of global values on behavior indicated a need to introduce the construct of domain-specific values, which are intermediate values that bridge the gap between global values and specific attitudes. Our results show that a three-dimensional structure was found for both global values and domain-specific values. These were labeled as the fun, interpersonal, and personal dimensions. Therefore, it was possible to address the relationship between the two sets of values along the three dimensions.

The results show that not all value dimensions in global values had impact on their counterparts in domain-specific values. The interpersonal and personal dimensions in global values had significant influence on their counterparts in domain-specific values. However, as expected, the fun dimension in global values had no significant impact on its corresponding domain-specific dimension. The results were consistent with Vinson's argument (1977) that global values exert influence on domain-specific values but they were only partially consistent. Furthermore, the global fun values had no significant impact on attitude components, but the other two dimensions exerted influence on attitude components.

Since the three dimensions in domain-specific values correlated highly with each other, a second-order factor was introduced to present the three value dimensions in order to overcome the problem of multi-colinearity. The second-order factor was labeled as domain-specific interest in food prosumption. It represents the general interest people have in food prosumption and exerts influence on the three dimensions in domain-specific values. Introducing such a second-order factor made our empirical model slightly different from the original conceptual model. The hypothesized direct influence from the domain-specific value dimensions to attitude components could not be tested directly in the empirical model. However, the second-order factor underlying the three value dimensions exerted a direct impact on attitude components. The results show that the second-order factor had significant impact on all the three attitude components.

Furthermore, this research also supports the proposition that domain-specific values play a more important role in consumer decision process for a specific behavior than global values. That is, domain-specific values explained more variance in attitudes in a specific domain than global values, and they fully mediated the influences of global values on attitudes.

Domain-specific values and the antecedents of intention

Domain-specific values had strong impact on antecedents of behavior intentions such as attitudes, self-efficacy, social norms, and past behavior, which supports the proposition that domain-specific values may function as the underlying motivational mechanism behind people's prosumption tendency.

As discussed earlier, the second-order factor of domain-specific interest had significant impact on all the attitude components. Moreover, the second-order factor also had significant influence on the global attitude even after controlling the mediating effect of As and Ap. Therefore, the attitude components only partially mediated the impact of domain-specific values on the global attitude.

Similarly, the introduction of the second-order factor of domain specific interest made it difficult to test the direct effects from the value dimensions to intention antecedents as suggested in the conceptual model. Instead, the empirical results show that the second-order factor had significant influence on social norms, self-efficacy, and past behavior.

In sum, it is possible that domain-specific values in food prosumption function as a common explanatory factor of the different antecedents of prosumption intentions, although this is a speculation of a more exploratory nature.

The theory of trying and prosumption

A large body of literature has documented the effects of attitude and other antecedents on behavioral intention. In our survey, we found support for a revised version of the theory of trying. Attitude, self-efficacy, and past behavior predicted prosumption intention significantly in the situation of preparing a dinner for friends.

Consistent with past research and theorizing, the results from this research also showed that the global attitude fully mediates the influence of attitude components on prosumption

intention. Attitude toward success (As) and attitude toward the process (Ap) had significant impact on the global attitude. That is, people will have a favorable attitude toward preparing a dinner for friends, if they value the outcome of a successful dinner or if they enjoy the meal preparation process or both. This implies that marketers can increase the prosumers' attitude favorability toward prosumption by either emphasizing the successful outcomes of a prosumption behavior or stressing the intrinsic pleasure and fun they can experience in the prosumption process. However, the global attitude played a less important role in impacting intention than self-efficacy and past behavior in our empirical context (e.g. Bagozzi and Kimmel 1995).

We found that self-efficacy had the strongest positive impact on intention to prosume. This indicates that self-efficacy plays a central role in consumer's decision process. In particular, when the prosumption process is complex, self-efficacy will be the major determinant of prosumption intention (Madden et al. 1992). One immediate implication of this result is that marketers could increase people's self-efficacy by reducing the complexity of the prosumption process.

The current research shows that past behavior had positive effects on intention to prosume, which is consistent with previous research (e.g., Bagozzi and Warshaw 1990). In addition to affecting intentions directly, it is possible that past behavior may serve to influence the antecedents of intentions. For instance, past behavior may influence the subject's self-efficacy or perceived behavioral control (Ajzen 1991) or may even influence attitude formation (Ouellette and Wood 1998). We argue that past experiences and self-efficacy will enhance each other. When people perform a prosumption behavior frequently and recently, familiarity with that prosumption behavior will make required information more accessible, therefore it will enhance their competence as well as their ability assessment to perform that behavior. On the other hand, when self-efficacy is high, people are more likely to perform a prosumption behavior more frequently as well. So these two factors influence each other mutually.

Situation difference

Our results also indicate that the theory of trying predicted differently depending on the situations of food prosumption. A within-group comparison between two different situations was conducted in the Norwegian sample. When preparing a dinner for friends, people's attitudes, self-efficacy, and past behavior all played a role in the decision process. However,

when people prepared a dinner for themselves, their past behavior was the only significant predictor of prosumption intentions. The findings imply that people's decision-making processes are deliberative in the situation of preparing a dinner for friends; however, they are habitual and thoughtless in the situation of preparing a dinner for oneself. People are less likely to form a complete intention for habitual behavior. Such incompletely formed intentions may leave the way open for automatic, unthinking reactions based on past behavior (Bagozzi and Warshaw 1990, 1992).

Further, Norwegians had more positive attitudes toward preparing a dinner for themselves than they did for friends. They prepared a dinner for themselves more often than for friends. They also had higher self-efficacy when they prepared a dinner for themselves, although self-efficacy had no significant impact on intention in such a situation. The later concurs with previous research that perceived behavioral control might not be a major predictor of behavior when perceived behavioral control is high (Madden et al. 1992).

Cultural variation

A cross-cultural validation was conducted to test the generalizability of the theory of trying in both situations of food prosumption. The results show that the theory of trying had different predictions for Norwegians and Chinese in the situation of preparing a dinner for friends, but similar predictions in the situation of preparing a dinner for oneself.

When people prepared a dinner for friends, attitudes, self-efficacy, and frequency of past behavior had significant impact on intentions for Norwegians. However, for Chinese, social norms, self-efficacy, and frequency of past behavior were important predictors of intentions. Attitudes were not an important predictor of intention for Chinese, instead, social norms correlated highly with intentions. This is consistent with previous findings that social norms could be more important in predicting behavior than attitudes in countries with collective cultures (Davidson et al. 1976, Han and Shavitt 1994). Self-efficacy was important in the decision process for both Norwegian and Chinese. Chinese also prepared a dinner for friends more often. The effects of frequency of past behavior on intention were stronger for Chinese than for Norwegians. It appears that preparing a dinner for friends is a more habitual thing for Chinese than for Norwegian.

When people prepared a dinner for themselves, the theory of trying had similar predictions for both Norwegians and Chinese. Only the frequency of past behavior mattered in predicting intentions. This further cross-culturally validates our argument that preparing a dinner for oneself is mainly driven by habit.

7. 2 Contribution and implications

Although prosumption is a ubiquitous phenomenon, surprisingly little conceptual and empirical research is available on this topic. The current study contributes to the sparse literature on prosumption and extends research on attitude-behavior relations and values research. There are also rich managerial implications from our empirical findings. In this section, we begin with the theoretical contributions and then discuss managerial implications of our findings.

7. 2.1 Theoretical contributions

Contribution to research on prosumption

This research contributes to research on prosumption in general and to research on food prosumption in particular. To the best of our knowledge, the present study is the first attempt to systematically address people's prosumption tendency from a socio-psychological perspective.

First, the current study sheds some light on research on prosumption by critically reviewing previous studies on prosumption-like behavior and by providing a formal conceptualization of prosumption. Although the concepts of prosumer and prosumption were proposed by Toffler (1980) two and half decades ago, little theorizing has been done. This study reviewed relevant research on customer participation and household production after an intensive literature review. A clear definition of prosumption was presented, and it has been distinguished from the traditional concept of production and of consumption.

In addition, by integrating values and the theory of trying and by considering other antecedents of behavioral intentions than attitudes, the model also allows researchers to more fully capture the motivations underlying prosumption tendency. However, depending on the

domain of prosumption behavior of interest (e.g., food prosumption, internet banking), a set of domain-specific values may need to be identified and measured.

Contribution to value research

Our findings contribute to the literature on value research. Past value research has primarily focused on the influence of global values on attitudes and behavior. Although global values can be used to explain and predict virtually all behaviors, their generality is both their strength and weakness since they can only explain a limited portion of variance in specific attitudes and behavior. Vinson's construct of domain-specific values (Vinson et al. 1977) provides us with a possible alternative to overcome the weakness of global values; however, such values have not been systematically examined in empirical studies. We extend the extant literature on values by the incorporating domain-specific values into the value→attitudes→ behavior hierarchy.

Furthermore, the current study adds to research on values by providing a definition and developing a measurement scale for domain-specific values. A multiple-item scale for domain-specific values in food prosumption was developed corresponding to the Multiple-Item-adaptation of List of Values (MILOV). In addition, three corresponding underlying dimensions emerged for both global values and domain-specific values in food prosumption. This made examining the relationships between the two sets of values along the three value dimensions possible. Moreover, the effects of global values and domain-specific values on attitudes were also compared.

Contribution to attitude-behavior relation models

Our conceptual framework advances attitudinal research in several ways. First, we add to research on attitude models by incorporating values as the explanatory mechanism behind attitudes and behavior. Empirical documentation of the effect of various antecedents of behavior intention is enormous (e.g., attitude, social norms, perceived behavioral control, and past behavior). However, the models on attitude-behavior relations have not addressed the possible explanatory mechanism behind these antecedents of intentions. The results of this study show that values, especially domain-specific values, explain considerable variances in such intention antecedents.

The findings also extend research on attitude theory by testing the generality of the theory of trying in different situations and different cultures. Although attitude-behavior relation models such as the theory of reasoned action, the theory of planned behavior, and even the theory of trying have been applied extensively within North America and Europe, few studies have examined the boundary conditions and generalizability of these models in a consumption setting, except for limited cross-cultural applications for the theory of reasoned action (Lee and Green 1991, Bagozzi, Wong, Abe, and Bergami 2000). The current study is the first study to examine situational and cultural contingencies on the theory of trying. Our findings show that the theory of trying predicts differently in different situations and different cultures.

Moreover, our model provides an alternative to traditional expectancy-value models by using values (e.g., general values and domain-specific values) as the explanatory mechanism behind attitudes. Expectancy-value models follow bottom-up logic by eliciting modal beliefs for each product attribute or each behavioral consequence. However, our model suggests that it is possible to follow top-down logic by measuring domain-specific values in a specific domain. These domain-specific values are more general than evaluations of specific product attributes or behavioral consequences, and they can predict various attitudes and behavior within one specific domain.

Methodological strength

In addition, the current study contributes to the literature by applying structural equation models to demonstrate the influence flow from global values to domain-specific values and then to specific attitudes and behavior. Most empirical research has presented correlational evidence for the relationship between values and attitudes or behavior with few exceptions. For instance, Homer and Kahle (1988) applied structural equation models to investigate the influence of global values on natural food shopping behavior. The current study applied the structural equation modeling approach to test our comprehensive conceptual model that integrates two sets of values and the theory of trying. The other strength of the current empirical study is the use of ordinary household members as respondents. This gives us the confidence to generalize our empirical results to other samples.

7. 2.2 Managerial implications

Our findings also have managerial implications for marketers in general and for marketers in food industry in particular. As households continue to undertake food prosumption activities, and as companies provide consumers more opportunities for food prosumption, such as half-processed food products (e.g., frozen pizza), marketers need to be aware what affects people's attitudes and behavior in food prosumption.

It seems more effective for marketers to apply domain-specific values for segmentation, product planning, and promotion in a specific domain than to apply global values. Our results show that domain-specific values in food prosumption have stronger impact on attitudes, self-efficacy, social norms, and past behavior than global values do. The global fun values especially have no impact on the domain-specific values and attitudes. But the domain-specific fun values in food prosumption have strong influences on attitude toward process and attitude toward trying and succeeding, self-efficacy, and past behavior. Therefore, the message to marketers is to make it more enjoyable for people to engage in food prosumption. The more fun people attach to food prosumption, the more positive attitudes they will have toward prosumption, the more likely they will try to improve their skills or ability to perform prosumption behavior, and all these will lead to stronger behavioral intentions and more actual food prosumption behaviors.

Our study shows that self-efficacy has the strongest influence on food prosumption tendency in the situation of preparing a dinner for friends. Reducing the complexity of the prosumption process can be a feasible technique to influence people's self-efficacy. It is possible for marketers to either design simpler processes or to provide better tools to facilitate food prosumption activities. For example, half-processed food such as frozen pizza or fish soup powder allows more people to make their own dinner simply; rice cookers or bread ovens make it easy to cook rice or make bread. Another way to accomplish this is to educate consumers to acquire the necessary skills for food prosumption. For instance, simple and easy-to-follow recipes for dinner in newspaper, magazine, or TV commercial could be useful.

The present study indicates that past behavior affects prosumption intention in both situations. Especially in the situation of preparing a dinner for oneself, past behavior is the only significant predictor of behavioral intentions. The results are so strong that they hold across samples from different cultures. Therefore, marketers should also carefully consider the

influence of past behavior on people's prosumption tendency. How to attract people to engage in preparing meals for themselves and maintain their interest until it becomes a habitual behavior are both challenges and opportunities for marketers and public policy makers.

Cultural variation is also an important factor to consider when marketers extend their activities to countries with different cultures. The findings in this study show that the established values—attitudes—behavior hierarchy applies well in countries with an individualistic culture such as Norway. However, this hierarchy loses its utility in countries with a collective culture such as China where attitudes were found not to be a significant predictor of behavioral intentions. Instead, social norms are more important than attitudes to predict behavior in collective societies. It is possible that the influence flows from values to social norms and then to specific behaviors.

7. 3 Limitations

Some limitations in the present study need discussion. First, a possible concern with our conceptual model is the role played by global values. As with most value research, global values have limited ability to explain and predict specific attitudes and behavior. In future research, it might be more appropriate to treat global values as moderating variables instead of direct antecedents of attitudes and behavior; for instance, it could be more fruitful to examine the interaction effect of global values and attitudes on behavioral intentions. The failure to find such significant interaction effects in this research may be due to the current research design. A new research design is needed to fulfill the purpose of exploring the moderating effect of global values.

A related issue is the measurement of domain-specific values. As discussed, domain-specific values overcome the weakness of global values and provide better predictions of attitudes and behavior in a specific domain. However, the generalizability of domain-specific values is limited to that domain. That is, we need to develop a new measurement of domain-specific values for each new domain of interest in our empirical research, which is rather demanding.

Another limitation of the current study is that our conceptual model excluded the link between behavior intentions and actual behavior. Because of the use of scenarios in the current study, it was difficult to measure people's actual food prosumption behavior. Nevertheless, it would be interesting to measure actual behaviors in future research. For instance, it is possible to carry out a follow-up study after a set time-period to measure people's real prosumption behavior within that time-period. In addition, behavioral intention was measured by a single item in our study. Even though the decision to use the single items was driven by a concern for reducing respondent fatigue, further research should consider using multiple-item measures for the variables to investigate whether these provide stronger tests and greater insight.

The third limitation of the present study is the large amount of missing values in attitude items. The typical pattern is that respondents answered only the first of two or three attitude items that were listed consequently. It is possible that respondents considered the two or three items as very similar, therefore it was unnecessary for them to answer all items. Although we solved the problem of missing values by applying certain replacement strategy, it still weakened our results to a certain degree. Therefore, it is important to avoid such problems of large missing values by improving questionnaire design in the future research.

The final possible limitation of this study relates to the two samples used in this study. The Norwegian sample was drawn from households in a large Norwegian city and the Chinese sample was drawn from households in a middle-sized city in South China. Although the population sizes of both cities were close, the degree to which they represented the whole population was different. Because of the total size and the large variation within the Chinese population, we consider the Norwegian sample represented the whole Norwegian population better than the Chinese sample represented the whole Chinese population. However, since our respondents were ordinary household members, our ability to generalize the present findings beyond the samples in the study was still rather strong. Furthermore, for our main purpose of cross-cultural comparison, our Chinese sample was drawn from an area where the traditional Chinese culture is less affected by western influence compared to big cities in China such as Shanghai, and Beijing.

7. 4 Future directions

The current study is the first attempt to systematically address socio-psychological aspects of prosumption behavior. We have shown that values people hold in general, and relating to the specific domain of interest, function as the motivational mechanism behind their attitudes and behavior in food prosumption. The generalizability of the findings and the validity of the conceptual framework need more validation. Further research is needed to investigate prosumption in other empirical domains by applying our general framework.

Another possible issue would be to examine prosumption behavior in a choice situation. It would be interesting to investigate not only those whose want to prosume, but also those who choose not to prosume. The understanding of both groups will provide important information for marketers.

Future research should explore more the effects of cultural variation. Although it was out of the scope of the current study to validate our whole conceptual model cross-culturally, it is a feasible and fruitful direction for future studies. For instance, it would be interesting to see whether the interpersonal dimension of global values and of domain-specific values will have the same influence on attitudes and social norms in an individualist culture and in a collective culture. It would also be interesting to see if different cultures not only emphasize value differently but also have different values. Furthermore, it is also possible for us to look more carefully at the impact of situation variation on the prediction of the theory of trying. For example, a third situation, preparing a dinner for family, could be included in future studies. We would obtain insight on the effects of situational variations from considering all three situations for food prosumption.

An interesting agenda for further research lies in investigating the unique characteristics of a certain prosumption behavior. A more qualitative approach could be suitable for such a purpose. For instance, in food prosumption, what are the factors other than values that influence people's decision to prosume or not? Such factors could be convenience orientation, economical concerns, taste, nutrition, hygiene, etc. Combined with values, these factors will provide us greater insight in people's decisions concerning food prosumption.

Another area for additional research is to understand more about the prosumers. That is, we would like to know more about why people decide to prosume, and how people experience their prosumption process. For the why question, research is needed to investigate the similarity and difference between values and goals. For the how question, future research should explore prosumers' emotional experiences. In addition, there will be many interesting and exciting topics when one further investigates the connection between emotions and motivations in the prosumption process. Overall, further exploration of the phenomenon of prosumption is needed to provide us with a better understanding of the prosumers and the prosumption process.

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APPENDIX

Appendix A: Summary of questions in English and in Norwegian

1. Summary of questionnaire in Norwegian

A. Items measuring domain-specific values in food prosumption

Under følger noen spørsmål om hva du legger vekt på når du skal lage mat. Sett ring rundt svaralternativet som passer.

	Helt uenig	Ganske uenig	Litt uenig	Verken enig eller uenig	Litt enig	Ganske enig	Helt enig
1. Jeg er villig til å ofre mye for å ha et hyggelig måltid sammen med min familie.	1	2	3	4	5	6	7
2. Jeg vil ofre mye for å vise mine venner at jeg setter pris på deres besøk.	1	2	3	4	5	6	7
3. Jeg liker å vise min familie og mine venner at jeg er flink til å lage mat.	1	2	3	4	5	6	7
4. Jeg synes det er gøy å handle inn ingredienser.	1	2	3	4	5	6	7
1. Av og til liker jeg å handle inn god mat til meg selv.	1	2	3	4	5	6	7
2. Det at jeg kan lage god mat øker min selvrespekt.	1	2	3	4	5	6	7
3. Å kunne lage middag fra bunnen av gir meg en følelse av "å få noe til".	1	2	3	4	5	6	7
4. Jeg er villig til å ofre mye for at mine nærmeste slektninger og venner skal sette pris på maten jeg lager.	1	2	3	4	5	6	7
5. Jeg er villig til å ofre mye for å servere god mat til vennene mine.	1	2	3	4	5	6	7
6. Jeg bryr meg mye om hva andre synes om maten jeg serverer.	1	2	3	4	5	6	7
7. Jeg er villig til å ofre mye for å spise mat som er laget på en hygienisk måte.	1	2	3	4	5	6	7
8. Jeg liker å kjøpe ingredienser som jeg aldri har smakt før.	1	2	3	4	5	6	7
1. Jeg liker å eksperimentere når jeg lager mat.	1	2	3	4	5	6	7
2. Jeg fortjener det beste, og jeg er villig til å ofre mye for å kjøpe de beste matvarene.	1	2	3	4	5	6	7
3. Jeg blir stolt av meg selv når andre liker maten min.	1	2	3	4	5	6	7
4. Jeg liker å få matlagingen unnagjort i en fei.	1	2	3	4	5	6	7
5. Jeg er villig til å ofre mye for å ta meg av matlagingen i familien.	1	2	3	4	5	6	7
6. Jeg serverer alltid mat som familien liker.	1	2	3	4	5	6	7
7. For å ha status som god kokk blant mine venner, er jeg villig til å ofre mye.	1	2	3	4	5	6	7
8. Jeg er villig til å ofre mye for å kunne spise næringsrik mat. næringsrik mat.	1	2	3	4	5	6	7

1. Jeg synes det er spennende å lage mat.	1	2	3	4	5	6	7
2. Å kunne lage mat har mye å gjøre med min selvrespekt.	1	2	3	4	5	6	7
3. Det er viktig for meg at jeg kan lage middag selv.	1	2	3	4	5	6	7
4. Jeg er villig til å ofre mye for å invitere mine gode venner til middag.	1	2	3	4	5	6	7
5. Jeg blir veldig lei meg hvis familien min ikke liker maten jeg serverer.	1	2	3	4	5	6	7
6. Jeg er villig til å ofre mye for å kunne spise sunn mat.	1	2	3	4	5	6	7
7. Det gir meg stor glede å lage til et måltid selv.	1	2	3	4	5	6	7
8. Jeg vil helst servere mat som ikke krever for mye forberedelser.	1	2	3	4	5	6	7

1. Jeg blir skuffet når jeg ikke får til et godt måltid	1	2	3	4	5	6	7
2. Jeg synes det er gøy å planlegge middag for mine gjester.	1	2	3	4	5	6	7
3. Jeg liker ikke å bruke for mye tid på å lage mat selv.	1	2	3	4	5	6	7
4. Jeg bruker mye tid og energi på å spare penger når jeg handler inn mat.	1	2	3	4	5	6	7

B. Items measuring global values

Her følger en liste over en del momenter som mennesker søker eller ønsker å få ut av livet. Studer listen nøye og sett ring rundt svaralternativet som passer.

	Helt uenig	Ganske uenig	Litt uenig	Verken enig eller uenig	Litt enig	Ganske enig	Helt enig
1. Å ha det gøy er viktig for meg.	1	2	3	4	5	6	7
2. Jeg spiller en viktig rolle i familien.	1	2	3	4	5	6	7
3. Jeg roser ofte andre for deres innsats.	1	2	3	4	5	6	7
4. Jeg streber etter å ha høy status blant mine venner.	1	2	3	4	5	6	7
5. Jeg behandler meg selv godt.	1	2	3	4	5	6	7
6. Jeg prøver å opptre på en slik måte at jeg kan se meg selv i speilet morgenen etter.	1	2	3	4	5	6	7
7. Jeg trenger å føle en viss grad av mestring i jobben min.	1	2	3	4	5	6	7
8. Jeg er ofte bekymret for min fysiske trygghet.	1	2	3	4	5	6	7

1. Jeg liker å gjøre ting litt utenom det vanlige.	1	2	3	4	5	6	7
2. Rekreasjon er en vesentlig del av livet mitt.	1	2	3	4	5	6	7
3. Jeg trenger å føle at det finnes et sted jeg kan kalle "hjemme".	1	2	3	4	5	6	7

4. Jeg legger vekt på å forsikre andre om at deres nærvær er ønsket og verdsatt.	1	2	3	4	5	6	7
5. Jeg verdsetter høyt et nært forhold til min familie og mine venner.	1	2	3	4	5	6	7
6. Jeg blir lett såret av hva andre sier om meg.	1	2	3	4	5	6	7
7. Jeg fortjener det beste, og gir ofte meg selv det jeg synes jeg fortjener.	1	2	3	4	5	6	7
1. Dersom man mister selvrespekten sin kan ingenting kompensere for det.	1	2	3	4	5	6	7
2. Jeg vil gjøre det jeg vet er rett, selv når jeg risikerer å tape penger.	1	2	3	4	5	6	7
3. Jeg blir skuffet når jeg ikke er i stand til å fullføre et prosjekt.	1	2	3	4	5	6	7
4. Det er viktig for meg å vite at jeg er trygg.	1	2	3	4	5	6	7
5. Jeg strekker meg langt for å fylle livet mitt med spennende aktiviteter.	1	2	3	4	5	6	7
6. Jeg gjør det jeg kan for å ha det gøy.	1	2	3	4	5	6	7
7. Jeg føler at mine nærmeste slektninger og venner trenger meg og setter pris på meg.	1	2	3	4	5	6	7
1. Jeg liker å kjøpe det beste av alt når jeg handler.	1	2	3	4	5	6	7
2. Andre menneskers meninger er viktige for meg.	1	2	3	4	5	6	7
3. Jeg prøver å være så åpen og ekte som mulig overfor andre.	1	2	3	4	5	6	7
4. Min selvrespekt er verdt mer enn gull.	1	2	3	4	5	6	7
5. Å vite at jeg gjør det rette i en gitt situasjon er verdt mer enn noe annet.	1	2	3	4	5	6	7
6. "Å få ting unna" er svært viktig for meg.	1	2	3	4	5	6	7
7. Min trygghet er svært viktig for meg.	1	2	3	4	5	6	7
8. Jeg ser på meg selv som en spenningssøkende person.	1	2	3	4	5	6	7
1. Rekreasjon er en nødvendighet for meg.	1	2	3	4	5	6	7
2. Å være en del av livet til mine nærmeste er svært viktig for meg.	1	2	3	4	5	6	7
3. Uten mine nære venner ville livet ha vært mye mindre meningsfylt.	1	2	3	4	5	6	7
4. Jeg er opptatt av hva andre tenker om meg.	1	2	3	4	5	6	7

5. Jeg fortjener det beste livet kan tilby.	1	2	3	4	5	6	7
6. Selv om andre kan være uenige, vil jeg ikke gjøre noe som truer selvrespekten min.	1	2	3	4	5	6	7

1. Tilbakemelding på jobbprestasjonen min er veldig viktig.	1	2	3	4	5	6	7
2. Økonomisk trygghet er veldig viktig for meg.	1	2	3	4	5	6	7
3. Jeg elsker fest og selskapelighet.	1	2	3	4	5	6	7
4. Når mine nærmeste har det vondt, lider jeg også.	1	2	3	4	5	6	7
5. Det å oppfylle mine ønsker og behov er en fulltidsjobb for meg.	1	2	3	4	5	6	7
6. Mer enn noe annet må jeg kunne respektere den jeg er.	1	2	3	4	5	6	7
7. Jeg vil ikke inngå noe kompromiss om forhold som kan medføre at jeg mister selvrespekten.	1	2	3	4	5	6	7
8. Jeg pleier å sette meg mål som jeg strekker meg for å nå.	1	2	3	4	5	6	7

C. Items measuring variables in the theory of trying: for the situation of preparing a dinner for oneself

Anta at du er alene hjemme en dag. I den forbindelsen ber vi deg om å beskrive hva du føler når du skal lage middag til deg selv. Forsøk så godt du kan å angi dine vurderinger. Sett ring rundt svaralternativet som passer.

1. Å lage en middag til meg selv er for meg:

Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig
Utilfredsstillende	1	2	3	4	5	6	7	Tilfredsstillende

2. Å ha laget en vellykket middag til meg selv er for meg:

Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig

3. Å ha laget en mislykket middag til meg selv er for meg:

Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig

4. Uansett resultat, å lage middag i seg selv er for meg:

Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig

Sett ring.

	Helt uenig	Ganske uenig	Litt uenig	Verken enig eller uenig	Litt enig	Ganske enig	Helt enig
1. Familien min mener at jeg bør lage middag til meg selv.	1	2	3	4	5	6	7
2. Jeg vet hvordan jeg lager middag til meg selv.	1	2	3	4	5	6	7
3. Jeg føler meg i stand til å lage middag til meg selv.	1	2	3	4	5	6	7
4. De fleste mennesker som er viktige i mitt liv ønsker at jeg skal lage middag til meg selv.	1	2	3	4	5	6	7
5. Jeg føler at jeg har de nødvendige ferdigheter for å kunne lage middag til meg selv.	1	2	3	4	5	6	7
6. Når jeg er hjemme alene , lager jeg ofte middag til meg selv.	1	2	3	4	5	6	7
7. Jeg har nylig laget middag til meg selv.	1	2	3	4	5	6	7
8. Når jeg er hjemme alene, vil jeg lage mat selv.	1	2	3	4	5	6	7

D. Items measuring variables within the theory of trying: for the situation of preparing a dinner for friends

Anta at du får noen gode venner på besøk i helgen. Du skal servere mat til 6-8 personer. I den forbindelsen ber vi deg om å beskrive hva du føler når du skal lage middag til selskapet. Sett ring. rundt svaralternativet som passer.

1. Å lage en middag til vennene mine er for meg:								
Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig
Utilfredsstillende	1	2	3	4	5	6	7	Tilfredsstillende
2. Å ha laget en vellykket middag til vennene mine er for meg:								
Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig
3. Å ha laget en mislykket middag til vennene mine er for meg:								
Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig
4. Uansett resultat, å lage middag i seg selv er for meg:								
Ubehagelig	1	2	3	4	5	6	7	Behagelig
Lite hyggelig	1	2	3	4	5	6	7	Hyggelig

Sett ring rundt svaralternativet som passer.

	Helt uenig	Ganske uenig	Litt uenig	Verken enig eller uenig	Litt enig	Ganske enig	Helt enig
1. Jeg føler meg i stand til å lage middag til vennene mine.	1	2	3	4	5	6	7
2. De fleste mennesker som er viktige i mitt liv ønsker at jeg selv skal lage middag til vennene mine.	1	2	3	4	5	6	7
3. Mine evner som hobbykokk er gode.	1	2	3	4	5	6	7

4. Jeg har nylig laget middag til vennene mine.	1	2	3	4	5	6	7
5. Familien min mener at jeg bør lage middag til vennene mine.	1	2	3	4	5	6	7
6. Jeg vet hva jeg skal gjøre når jeg lager middag til vennene mine.	1	2	3	4	5	6	7
7. Jeg lager ofte middag til vennene mine selv.	1	2	3	4	5	6	7
8. Jeg føler at jeg har de nødvendige ferdigheter for å lage middag til vennene mine.	1	2	3	4	5	6	7
9. Når jeg inviterer venner til middag, vil jeg lage mat selv.	1	2	3	4	5	6	7

E. Demographic information

Vennligst Sett kryss "x" ved siden av svaralternativet som passer.

1. Kjønn: ☐ Mann ☐ Kvinne
2. Alder:
   ☐ 0-20 år ☐ 21-30 år ☐ 31-40 år ☐ 41-50 år ☐ 51-60 år ☐ mer enn 60 år
3. Hvor lang utdannelse har du:
   ☐ Grunnskole (eller tilsvarende) ☐ 1-3 år utover grunnskole
   ☐ 1-2 år utover videregående skole ☐ Mer enn 2 år utover videregående skole
4. Arbeidssituasjon:
   ☐ Heltidsarbeidende ☐ Deltidsarbeidende ☐ Hjemmeværende ☐ Student/elev ☐ Pensjonist/trygdet
5. Antall medlemmer i husholdningen: _____
6. Hva er din husstands inntektsnivå per år? Kryss av på linjen:

200,000 300,000 400,000 500,000 600,000 700,000 800,000

250,000 350,000 450,000 550,000 650,000 750,000

2. Summary of questionnaire in English

A. Items measuring domain-specific values

These are questions about what you think is important when you prepare a dinner. Put circle around the alternative that fit you best.

Totally Disagree 1	Strongly disagree 2	Slightly disagree 3	Neither disagree or agree 4	Slightly agree 5	Strongly agree 6	Totally agree 7

Sense of belonging
1. Having a pleasant meal with my family is important to me.
2. It is important for me that my closest relatives and friends appreciate the food I make.
3. Taking care of the cooking in the family is important to me.
4. It is important for me to invite my good friends for dinner.

Warm relationship with others
1. I would like to make a point of reassuring my friends that their presence is welcomed and appreciated.
2. It is important for me to serve good food to my friends.
3. I always serve food my family likes.

Being well-respected
1. I enjoy showing my family and my friends that I am a good cook
2. I care a lot about what others think about the food I serve.
3. I strive to retain the status as a good cook among my friends.
4. I get very upset if my family does not like the food I serve.

Excitement, fun and enjoyment
1. I think it is fun to shop for ingredients.
2. I enjoy buying ingredients I have never tasted before.
3. I like to experiment when I cook.
4. I find cooking exciting.
5. It gives me great pleasure to make a meal by myself.
6. It is fun to plan a dinner for my guests.

Self fulfillment
1. Sometimes I like to buy good food for myself.
2. I deserve the best, and always buy top quality food products.

Self respect
1. The fact that I can make good food increases my self respect.
2. I am proud of myself when others like my food.
3. My self respect has a lot to do with my cooking skills.

A sense of accomplishment
1. I feel a sense of accomplishment from preparing a dinner from scratch.
2. It is important for me that I can prepare a dinner by myself.
3. I am disappointed when I am unable to make a good meal.

Safety
1. It is important for me to eat food that is prepared in a hygienic way.
2. It is important for me to have nutritious food.

3. It is important for me to have healthy food.
4. I spend a lot of time and energy to save money when I purchase food.

B. Items measuring global values

These are questions about what people think is important in live. Put circle around the alternative that fit you best.

Totally Disagree 1	Strongly disagree 2	Slightly disagree 3	Neither disagree or agree 4	Slightly agree 5	Strongly agree 6	Totally agree 7

Security
1. I am often concerned about my physical safety.
2. Knowing that I am physically safe is important to me.
3. My security is a high priority to me.
4. Financial security is very important to me.

Excitement
1. I enjoy doing things out of the ordinary.
2. I strive to fill my life with exciting activities.
3. I thrive on parties.
4. I consider myself a thrill-seeker.

Fun and enjoyment
1. Having fun is important to me.
2. Recreation is an integral part of my life.
3. I work hard at having fun.
4. Recreation is a necessity for me.

Sense of belonging
1. I play an important role in my family.
2. I need to feel there is a place that I can call "home".
3. I feel appreciated and needed by my closest relatives and friends.
4. Being a part of the lives of those with whom I am close is a high priority for me.

Warm relationships with others
1. I often commend others on their efforts, even when they fail.
2. I make a point of reassuring others that their presence is welcomed and appreciated.
3. I try to be as open and genuine as possible with others.
4. Without my close friends, my life would be much less meaningful.
5. I value warm relationships with my family and friends highly.
6. When those who are close to me are in pain, I hurt too.

Being well-respected
1. I strive to retain a high status among my friends.
2. I am easily hurt by what others say about me.
3. The opinions of others are important to me.
4. I care what others think of me.

Self-fulfillment
1. I treat myself well.
2. I deserve the best, and often give myself what I deserve.

3. I like to buy the best of everything when I go shopping.
4. The finer things in life are for me.
5. Meeting my desires is a full-time job for me.

Self-respect
1. I try to act in such a way as to be able to face myself in the mirror the next morning.
2. If one loses one's self-respect, nothing can compensate for the loss.
3. My self-respect is worth more than gold.
4. Even though others may disagree, I will not do anything to threaten my self-respect.
5. More than anything else, I must be able to respect who I am.
6. I will do what I know to be right, even when I stand to lose money.
7. Knowing that I am doing the right thing in a given situation is worth any price.
8. I will not compromise on issues that could cause me to lose my self-respect.

A sense of accomplishment
1. I need to feel a sense of accomplishment from my job.
2. I am disappointed when I am unable to see a project through the end.
3. "Getting things done" is always high on my "to-do" list.
4. Feedback on my job performance is very important.
5. I tend to set and strive to reach my goals.

C. Items measuring variables in the theory of trying: for the situation of preparing a dinner for oneself

Imagine a situation that you are alone at home. Please describe how you feel when you prepare a meal for yourself.

Totally Disagree	**Strongly disagree**	**Slightly disagree**	**Neither disagree or agree**	**Slightly agree**	**Strongly agree**	**Totally agree**
1	**2**	**3**	**4**	**5**	**6**	**7**

Social norms
1) Most people who are important in my life would like me to prepare a dinner for myself.
2) My family members think that I should prepare a dinner for myself.

Self-efficacy
1) I feel capable to prepare a dinner for myself.
2) I know what to do when I should prepare a dinner for myself.
3) I feel that I possess the necessary skills to prepare a dinner for myself.

Past experience
1) I frequently prepare dinners for myself.
2) I have recently prepared a dinner for myself.

Prosumption intention
1) When I am alone at home, I intend to prepare a meal by myself.

Attitude toward preparing a dinner for oneself

1a) My trying to prepare a dinner for myself would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7
Satisfying						Unsatisfying
1	2	3	4	5	6	7

Attitude toward process

No matter what is the result, my trying to prepare a dinner for myself would make me feel:

The process of preparing a dinner for myself would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7

Attitude toward success

My trying and succeeding at preparing a dinner for myself would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7

Attitude toward failure

My trying and failing at preparing a dinner for myself would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7

D. Items measuring variables in the theory of trying: for the situation of preparing a dinner for oneself

Image that you are going to invite some friends for dinner this weekend. You need to prepare dinner for 6-8 persons. In this situation, please describe how you feel when you prepare a meal for friends. Circle around the alternative that fit you best.

Totally Disagree	**Strongly disagree**	**Slightly disagree**	**Neither disagree or agree**	**Slightly agree**	**Strongly agree**	**Totally agree**
1	2	3	4	5	6	7

Social norms

1) Most people who are important in my life would like me to prepare a dinner for my friends.
2) My family thinks that I should prepare a dinner for my friends.

Self-efficacy

1) I feel capable to prepare a dinner for my friends.
2) I know what to do when I should prepare a dinner for my friends.
3) I think that I am a god hobby cook.
4) I feel that I possess the necessary skills to prepare a dinner for my friends.

Frequency of past experience

1) I frequently prepare dinners for my friends by myself.

Recency of past experience
1) I have recently prepared a dinner for my friends.

Intention
1) When I invite friends for dinner, I intend to prepare a meal by myself.

Attitude toward preparing a dinner for friends
1a) My trying to prepare a dinner for my friends would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7
Satisfying						Unsatisfying
1	2	3	4	5	6	7

Attitude toward process
No matter what is the result, my trying to prepare a dinner for my friends by myself would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7

Attitude toward success
My trying and succeeding at preparing a dinner for my friends by myself would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7

Attitude toward failure
My trying and failing at preparing a dinner for my friends by myself would make me feel:

Unpleasant						Pleasant
1	2	3	4	5	6	7
Enjoyable						Disgusting
1	2	3	4	5	6	7

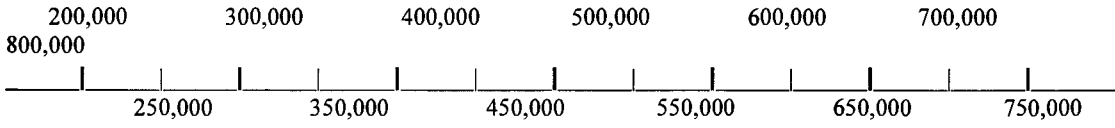
E. Demographic information

Please answer the following questions about your demographic information:

1. Gender: Male___ Female__
2. Age:
   1) 0-20 year 2)21-30 year 3) 31-40 year 4) 41-50 year 5) 51-60 year 6) more than 60 year
3. What is your education level:
   1) Middle school 2) High school
   3) 1-2 years in college 4) more than 2 years in college
4. Employment:
   1) Fulltime employment 2) Part-time employment 3) At home 4) Student 5) Retired

5. The number of your household members: _____

6. What is the income level of your household per year (in Norwegian Kroner)?



Appendix B: Descriptive statistics for the Norwegian sample

Table B.1-B.4 present the descriptive statistics for the measurement items of global values, domain-specific values, variables in the theory of trying in two situations of food prosumption for the Norwegian sample in the current study. Means, standard deviations, skewness, kurtosis, and the number of responses were reported for each item. The descriptive statistics were discussed in section 5.1.

Table B.1. Descriptive statistics of the sample (Global values, 36 items)

Item	Mean	Std. dev.	Skewness[1]	Kurtosis[2]	N
fun1	5,91	1,141	-1,339	2,537	377
fun3	4,89	1,482	-,366	-,373	380
belong1	6,05	1,068	-1,222	1,308	376
belong2	6,45	,965	-2,742	9,841	379
belong3	5,92	,990	-,740	,250	379
belong4	6,22	,927	-1,330	1,859	379
relation1	5,40	1,242	-,801	,938	377
relation2	5,92	1,046	-,889	,649	380
relaton3	6,46	,857	-2,058	5,920	380
relation4	6,01	,938	-1,259	2,107	377
relation5	6,07	1,040	-1,272	1,597	378
relation6	6,34	,881	-1,934	5,927	378
be-respected2	4,59	1,438	-,326	-,211	379
be-respect3	4,62	1,341	-,527	,012	376
be-respected4	4,54	1,404	-,511	,084	375
fulfill2	4,43	1,459	-,128	-,159	379
fulfill3	4,66	1,547	-,353	-,471	376
fulfill4	4,88	1,485	-,416	-,089	378
fulfill5	3,18	1,688	,374	-,645	378
self-respect4	5,44	1,291	-,704	,281	377
self-respect5	5,51	1,176	-,791	,521	379
self-respect6	5,09	1,363	-,584	,147	379
self-respect7	5,41	1,347	-,768	,310	379
self-respect8	5,37	1,373	-,729	,115	379
accomplish1	6,18	,932	-1,704	5,288	377
accomplish2	5,78	1,080	-,973	1,419	380
accomplish3	5,65	1,229	-1,144	1,376	380
accomplish4	5,86	,967	-,775	1,131	375
accomplish5	5,44	1,232	-,785	,537	379
safe2	6,15	,950	-1,265	2,258	380
safe3	5,98	1,102	-1,276	2,278	379
safe4	6,19	,928	-1,633	4,887	378
excite1	4,83	1,428	-,292	-,335	378
excite2	4,64	1,417	-,268	-,102	377
excite3	4,18	1,645	-,163	-,630	380
excite4	4,69	1,587	-,454	-,383	379

[1] Skewness values falling outside the range of -1 to +1 indicate a substantially skewed distribution (Hair et al. 1998).
[2] A positive values indicates a peaked distribution while negative values indicate a flat distribution (Hair et al. 1998).

Table B.2 presents the descriptive statistics for the measurement items of domain-specific values for the Norwegian sample.

Table B.2. Descriptive statistics of the sample (Domain-specific values, 17 items)

Item	Mean	Std. dev.	Skewness	Kurtosis	N
fself-respect1	4,72	1,551	-,578	,148	379
fself-respect2	5,46	1,268	-,702	,451	378
fself-respect3	4,21	1,716	-,306	-,574	379
faccomplish1	5,21	1,473	-,898	,605	377
fbe-respect3	3,68	1,725	-,006	-,780	378
fsafe2.	5,22	1,360	-,673	,161	380
fsafe3	5,33	1,387	-,724	,146	378
ffun1	4,96	1,763	-,657	-,560	380
ffun3	4,96	1,566	-,737	-,005	372
ffun4	5,12	1,597	-,825	,106	376
ffun5	5,08	1,459	-,654	,109	378
ffun6	5,30	1,553	-,928	,292	375
fbelong1	5,88	1,126	-,993	,660	379
fbelong2	5,33	1,409	-,979	,910	378
fbelong4	4,85	1,453	-,627	,277	378
frelation1	5,95	1,036	-,953	,503	380
frelation2	5,49	1,260	-,983	1,433	375

Table B.3 presents the descriptive statistics for the measurement items of variables in the theory of trying in the situation of preparing a dinner for friends for the Norwegian sample.

Table B.3. Descriptive statistics of the sample (Variables in the theory of trying: Prepare a dinner for friends)

Item	Mean	Std. dev.	Skewness	Kurtosis	N
Ag1	5,69	1,458	-1,073	,523	315
Ag2	6,07	1,182	-1,465	2,084	361
Ag3	5,94	1,263	-1,373	1,921	310
As1	6,41	,971	-2,486	8,370	315
As2	6,52	,882	-2,720	10,369	369
Af1	2,07	1,300	1,312	1,991	337
Af2	2,08	1,307	1,411	2,190	348
Ap1	5,31	1,320	-,604	,166	323
Ap2	5,36	1,419	-,811	,536	362
SN1	5,10	1,571	-,728	,192	378
SN2	4,63	1,737	-,411	-,422	376
Self-efficacy1	6,24	1,049	-1,922	4,658	380
Self-efficacy2	6,06	1,180	-1,603	2,909	377
Self-efficacy3	5,90	1,268	-1,450	2,175	378
Recency	5,16	2,046	-,863	-,583	372
Frequency	4,72	1,922	-,503	-,853	378
Intention	5,87	1,447	-1,467	1,830	379

Table B.4 presents the descriptive statistics for the measurement items of variables in the theory of trying in the situation of preparing a dinner for oneself for the Norwegian sample.

Table B.4. Descriptive statistics of the sample (Variables in the theory of trying: Prepare a dinner for oneself)

Item	Mean	Std. dev.	Skewness	Kurtosis	N
Ag1	5,16	1,443	-,632	,315	324
Ag2	4,78	1,676	-,618	-,213	353
Ag3	4,94	1,623	-,642	-,155	312
As1	5,71	1,294	-1,113	1,426	331
As2	5,50	1,515	-1,106	1,018	356
Af1	2,68	1,418	,489	-,198	328
Af2	2,56	1,408	,582	-,182	358
Ap1	4,96	1,542	-,610	,075	332
Ap2	4,76	1,746	-,589	-,369	354
SN1	4,98	1,889	-,663	-,486	378
SN2	4,82	1,819	-,575	-,410	378
Self-efficacy1	6,59	,787	-2,648	9,722	378
Self-efficacy2	6,50	,876	-2,278	6,584	377
Self-efficacy3	6,51	,909	-2,571	8,705	380
Recency	5,54	1,990	-1,164	-,017	377
Frequency	5,29	1,865	-,898	-,357	380
Intention	5,48	1,828	-1,088	,075	380

Appendix C: Comparison of models with list-wise deletion sample size and replaced sample size

We compared the measurement models and the structure models with the two sample sizes, one with list-wise deletion (N=211) and one with replaced missing values (N=366).

1. Measurement models

1.1 Global values measured by MILOV (Partial aggregation model)

Table C.1: Fit indices of the measurement model of global values with list-wise deletion sample size

	Goodness of fit	Specifications
Model	Chi-square = 16.79 (df = 6) RMSEA = 0.092 NNFI = 0.95 CFI = 0.98 Standardized RMR= .033	Partial aggregation model for three value dimensions measured by MILOV

Table C.2: Comparison of factor loading and item reliability of the measurement model of global values

Items	Factor loading		Item reliability	
	Replaced sample	List-wise deletion sample	Replaced sample	List-wise deletion sample
fun	0.74	0.83	0.55	0.68
excitement	0.75	0.71	0.57	0.51
belonging	0.74	0.73	0.54	0.53
relation	0.89	0.90	0.80	0.81
self-respect	0.60	0.59	0.36	0.35
accomplishment	0.87	0.92	0.76	0.85

1.2 Domain-specific values (Partial disaggregation model)

Table C.3: Fit indices of the measurement model of domain-specific values with list-wise deletion sample size

(One second-order factor model with three first order factor)

	Goodness of fit	Specifications
Model	Chi-square = 8.65 (df = 6) RMSEA = 0.042 NNFI = 0.99 CFI = 1.00 Standardized RMR= .016	Partial disaggregation model for domain-specific values with one second-order factor

Table C.4: Comparison of factor loading and item reliability of the three first-order factors

Items	Factor loading		Item reliability	
	Replaced sample	List-wise deletion sample	Replaced sample	List-wise deletion sample
Interperson1	0.88	0.89	0.77	0.79
Interperson2	0.95	0.93	0.89	0.86
Fun1	0.94	0.93	0.89	0.87
Fun2	0.77	0.80	0.59	0.65
Personal1	0.90	0.87	0.82	0.75
Personal2	0.87	0.92	0.76	0.84

Table C.5: Comparison of factor loading and item reliability of the second-order factor of domain-specific values

Items	Factor loading		Item reliability	
	Replaced sample	List-wise deletion sample	Replaced sample	List-wise deletion sample
Interpersonal	0.85	0.79	0.28	0.38
Fun	0.82	0.88	0.33	0.22
Personal	0.84	0.78	0.29	0.38

2. Structure models

Table C.6: Fit indices of the structural model of the whole model with list-wise deletion sample size

	Goodness of fit	Specifications
Model	Chi-square = 682.47 (df = 361) RMSEA = 0.061 NNFI = 0.97 CFI = 0.97 Standardized RMR= .056	Including global values, domain-specific values, theory of trying in the situation of preparing a dinner for friends

Table C.7: Comparison of path coefficients from global value dimensions to the second-order factor of domain-specific interest in food prosumption

	List-wise deletion sample size	Replaced sample size
	Domain-specific interest	Domain-specific interest
G-Fun	0.27*	0.08
G-Interpersonal	0.00	0.26*
G-Personal	0.14	0.15
Safe	0.37*	0.39*

Note: G-Interpersonal – The interpersonal dimension in global values
G-Personal – The personal dimension in global values
D-Fun – The fun dimension in domain-specific values

Table C.8: Comparison of path coefficients from the second-order factor of domain-specific interest in food prosumption to variables in the theory of trying

	List-wise deletion sample size	Replaced sample size
	Domain-specific interest	Domain-specific interest
Ag	0.32	0.25
As	0.55	0.51
Af	-0.24	-0.25
Ap	0.63	0.52
Intention	-0.12	0.10
SN	0.50	0.52
Self-efficacy	0.56	0.56
Past-behavior	0.66	0.63
Interpersonal	0.83	0.85
Fun	0.89	0.87
Personal	0.73	0.79

Note: Ag – Global attitude
SN – Social norms
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

Table C.9: Comparison of path coefficients from the global attitude to the attitude components

	List-wise deletion sample size	Replaced sample size
	Ag	Ag
As	0.46*	0.41*
Af	0.02	0.02
Ap	0.21*	0.28*

Note: Ag – Global attitude
As – Attitude toward trying and succeeding
Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

Table C.10: Comparison of path coefficients from the antecedents of intention to intention in the theory of trying

	List-wise deletion sample size	Replaced sample size
	Intention	Intention
Ag	0.35*	0.21*
SN	0.08	-0.05
Self-efficacy	0.60*	0.56*
Past-behavior	0.23	0.34*

Note: Ag – Global attitude
SN – Social norms

Appendix D: Goodness-of-fit indices in LISREL

Goodness-of-fit tests determine if the model being tested should be accepted or rejected. These overall fit tests do not establish that particular paths within the model are significant. If the model is accepted, the researcher will then go on to interpret the path coefficients in the model. Because "significant" path coefficients in poor fit models are not meaningful. Among the numerous fit indices proposed in the literature, four fit indices are reported in the current study. They are RMSEA, CFI, NNFI and SRMR. Chi-square is also reported. In the following space, each fit indices is discussed briefly.

Model chi-square

Model chi-square, also called *discrepancy*, is the most common fit test. The chi-square value should not be significant if there is a good model fit, while a significant chi-square indicates lack of satisfactory model fit. That is, chi-square is a "badness of fit" measure in that a finding of significance means the given model's covariance structure is significantly different from the observed covariance matrix. If model chi-square is < 0.05, the researcher's model is rejected.

However, the chi-square test may have too much power in several ways. First, the more saturated the model, the more likely a good fit. In a just-identified model, with as many parameters as possible and still achieving a solution, there will be a perfect fit. Second, the larger the sample size, the more likely the rejection of the model will be. In very large samples, even tiny differences between the observed model and the perfect-fit model may be found significant. The third, the chi-square fit index is also very sensitive to violations of the assumption of multivariate normality. Because of these reasons, many researchers who use structural equation modeling believe that with a reasonable sample size (ex., > 200) and good approximate fit as indicated by other fit tests (ex., NNFI, CFI, RMSEA), the significance of the chi-square test may be discounted and that a significant chi-square is not a reason by itself to modify the model.

RMSEA-- the measure of error of approximation

RMSEA (Root mean square error of approximation) is a popular measure of fit, partly because it does not require comparison with a null model. Also, RMSEA has a known distribution, related to the non-central chi-square distribution, and thus does not require bootstrapping to establish confidence intervals. By convention, there is good model fit if RMSEA less than or equal to .05. There is adequate fit if RMSEA is less than or equal to .08.

NNFI

The NNFI (non-normed fit index), also called the *Bentler-Bonett non-normed fit index.* It is one of the fit indexes less affected by sample size. NNFI is not guaranteed to vary from 0 to 1. A negative NNFI indicates that the chi-square/df ratio for the null model is less than the ratio for the given model, which might occur if one's given model has very few degrees of freedom and correlations are low. NNFI close to 1 indicates a good fit. By convention, NNFI values below .90 indicate a need to re-specify the model. More recently, Hu and Bentler (1999) have suggested NNFI >= .95 as the cutoff for a good model fit.

CFI

The CFI (comparative fit index), is also known as the Bentler Comparative Fit Index. CFI compares the existing model fit with a null model which assumes the latent variables in the model are uncorrelated (the "independence model"). That is, it compares the covariance matrix predicted by the model to the observed covariance matrix, and compares the null model (covariance matrix of 0's) with the observed covariance matrix, to gauge the percent of lack of fit which is accounted for by going from the null model to the researcher's SEM model. CFI varies from 0 to 1. CFI close to 1 indicates a very good fit. By convention, CFI should be equal to or greater than .90 to accept the model, indicating that 90% of the covariation in the data can be reproduced by the given model.

SRMR

The SRMR (standardized root mean square residual) is the average difference between the predicted and observed variances and covariances in the model, based on standardized residuals. Standardized residuals are fitted residuals divided by the standard error of the residual (this assumes a large enough sample to assume stability of the standard error). The smaller the standardized RMR, the better the model fit. SRMR is 0 when model fit is perfect.

Appendix E: Exploratory factor analysis of global values

We applied Herche's (1994) 44-item MILOV scale (Multiple-item adaptation of List of Values) to measure global values. Respondents ((N =366) were ordinary household members from a major Norwegian city.

In order to assess the 9-factor structure of the MILOV scale, an exploratory factor analysis was run to assess the degree to which the items loaded on the "correct" factors. The oblimin- rotated pattern matrix (Maximum likelihood extraction) show a 12-factor solution resulted in loading patterns that closely match a priori expectations. Most items associated with 6 of the 9 factors (safety, excitement, being well respected, self-respect, self-fulfillment, and sense of accomplishment) were loaded on the "correct" factors. Items associated with fun were loaded on two factors: recreation and fun. Also, items for warm relationships with others and sense of belonging were loaded mixed on two factors. Two 1-item factors had no interoperation meaning.

Since people usually do not consider preparing a dinner as a recreation activity, the recreation dimension may not be so relevant to food consumption in general. Therefore, we decided to remove the recreation dimension of the fun factor. A new exploratory factor analysis was run after 2 items (fun2, fun4) were removed. A clear 11-factor solution resulted in loading patterns that closely match a priori expectations. Most items associated with the nine factors were loaded on the "correct" factors. Two 1-item factors had no interoperation meaning. The results are shown in Table E.1.

Table E.1: Exploratory factor analysis of global values measured by MLOV

	Factor										
Items	1	2	3	4	5	6	7	8	9	10	11
safe3	,825										
safe2	,809										
safe4	,527										
belong2	,499										
excite3		,734									
excite2		,680									
excite1		,531									
accomplish3		,341									
accomplish5		,328									
be-respected4			-,916								
be-respected2			-,517								
be-respect3			-,498								
be-respected1			-,345								
relation5			-,323								

Items	Factor 1	2	3	4	5	6	7	8	9	10	11
self-respect8				,795							
self-respect6				,707							
self-respect7				,562							
self-respect4				,456							
self-respect5				,428							
belong1					,695						
belong4					,656						
belong3					,587						
relation6					,389						
relation1					,324						
fulfill2						-,704					
fulfill3						-,450					
fulfill4						-,389					
self-respect2						-,306					
self-respect1							-,807				
fulfill1											
fun1								-,740			
fun3								-,732			
excite4									,469		
self-respect3									,432		
relaton3									,388		
relation4									,365		
relation2											
accomplish2										,396	
accomplish1										,383	
accomplish4											
safe1											,482
fulfill5											

Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.
a Rotation converged in 28 iterations.

Appendix F: Measurement model of the theory of trying in the situation of preparing a dinner for oneself

As discussed in section 5.5, a similar procedure was applied to the situation of preparing a dinner for oneself as for the situation of preparing a dinner for friends. Similarly, the two indicators of Af were combined into one aggregated indicator (the average). The error variance of this aggregated indicator was fixed[3]. The measurement model fit well with the following fit indices shown in Table F.1.

Table F.1: Fit indices of measurement models (The theory of trying, for oneself)

	Goodness of fit	Specifications
Model 1	Chi-square = 228.15 (df =78) RMSEA = 0.073 NNFI = 0.97 CFI = 0.98 Standardized RMR= .025	Af fixed

As shown in Table F.2, the factor loadings of all the variables were high and significant. The item reliability varied from 0.49 to 0.99, exceeding the criteria of 0.5. Composite reliability of all subscales exceeds 0.6. In total, convergent validity is assured based on that all the factor loading are reasonably high and significant and the model fit indices are acceptable.

A weak form of discriminant validity is also achieved for all factor correlations are significantly less than 1. Table F.3 reports correlations between latent constructs. The discriminant validity for all latent constructs is also achieved according to Fornell/Larcker's criterion (1981).

[3] Error variance of Af is fixed to 0.21. The correlation 0.89 between the two items of Af is assigned as the reliability of this aggregated indicator. The error variance of this aggregated indicator is fixed as (1-0.89)*(the variance of this aggregated indicator), which equal (1-0.89)*1.909=0.21.

Table F.2: Factor loading and reliability of variables within the theory of trying for the situation of prepare a dinner for oneself

Items	Factor loading	Item reliability	Average variance extracted	Composite reliability
Ag1	0.88	0.78		0.95
Ag2	0.97	0.94		
Ag3	0.94	0.88		
As1	0.92	0.84		0.94
As2	0.96	0.92		
Af	1.00	0.89		
Ap1	0.96	0.91		0.97
Ap2	0.99	0.99		
SN1	0.89	0.79		0.86
SN2	0.85	0.71		
Self-efficacy1	0.94	0.89		0.91
Self-efficacy2	0.91	0.84		
Self-efficacy3	0.76	0.58		
Recency	0.70	0.49		0.79
Frequency	0.90	0.82		
Intention	1.00			

Note: Ag – Global attitude SN – Social norms
As – Attitude toward trying and succeeding Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

Table F.3: Correlations between latent variables within the theory of trying for the situation of preparing a dinner for friends.

	Ag	As	Af	Ap	SN	Self-efficacy	Past behavior	Intention
Ag	1.00							
As	0.70	1.00						
	(0.03)							
Af	0.18	0.00	1.00					
	(0.05)	(0.06)						
Ap	0.75	0.57	0.23	1.00				
	(0.02)	(0.04)	(0.05)					
SN	0.13	0.10	-0.05	0.16	1.00			
	(0.06)	(0.06)	(0.06)	(0.06)				
Self-	0.17	0.16	-0.03	0.11	0.25	1.00		
efficacy	(0.05)	(0.05)	(0.06)	(0.05)	(0.06)			
Past	0.62	0.43	0.18	0.46	0.28	0.31	1.00	
behavior	(0.04)	(0.05)	(0.06)	(0.05)	(0.06)	(0.05)		
Intention	0.48	0.29	0.09	0.38	0.24	0.29	0.82	1.00
	(0.04)	(0.05)	(0.06)	(0.05)	(0.05)	(0.05)	(0.03)	

Note: Ag – Global attitude SN – Social norms
As – Attitude toward trying and succeeding Af – Attitude toward trying and failing
Ap – Attitude toward the trying process

Appendix H: Applying the principle of a multi-group analysis to test the situation difference in the Norwegian sample

We tested the situation difference in one group by applying the principle of a multi-group approach. As shown in Figure 6.13 in section 6.4., the model including the theory of trying in both situations had satisfactory fit, which implied identical factors were reasonable representations of the data in both situations.

Therefore, we began with testing the invariance of factor loading with a chi-square difference test. That is, we compared the chi-squares for the equal factor loading model to the equal factor pattern model. For example, we constrained the first item of global attitudes in both situations to be equal; then compared the chi-square of this model to the equal factor pattern model shown in Figure 6.11 in section 6.4. As shown in Table H.1, the global attitude, self-efficacy, and social norms had at least one factor loading invariant across the two situations. However, past behavior had no factor loading invariant across situations. Therefore, partial invariance across situations of factor loadings for attitude, self-efficacy and social norms was established.

Table H.1: Test of partial invariance of factor loading

Baseline model: χ^2 factor pattern equal: χ^2=358.36 (df=174)		
Global attitudes	Equal item 1: EQ LX 2 1 LX 12 5	χ^2=360.60, $\Delta\chi^2(1) = 2.24 < 3.84$
	Equal item 2: EQ LX 3 1 LX 13 5	χ^2=359.59, $\Delta\chi^2(1) = 1.23 < 3.84$
Self-efficacy	Equal item 1: EQ LX 5 2 LX 15 6	χ^2=358.36, $\Delta\chi^2(1) = 0 < 3.84$
	Equal item 2: EQ LX 6 2 LX 16 6	χ^2=364.50, **$\Delta\chi^2(1)= 6.14 > 3.84$**
Social norms	Equal item 1: EQ LX 8 3 LX 18 7	χ^2=359.30, $\Delta\chi^2(1) = 0.94 < 3.84$
Past behavior	Equal item 1: EQ LX 10 4 LX 20 8	χ^2=365.11, **$\Delta\chi^2(1) = 6.75 > 3.84$**

Then, we continued to test invariance of the path coefficients among latent variables across situations. For example, we constrained the path coefficient of global attitude in both situations to be equal and compared the chi-square of this model to the baseline model (the model with partial invariance of factor loadings).

As shown in Table H.2, the results of invariance tests of path coefficients showed that only the path from social norms to intention was invariant across situations. However, social norms had non-significant

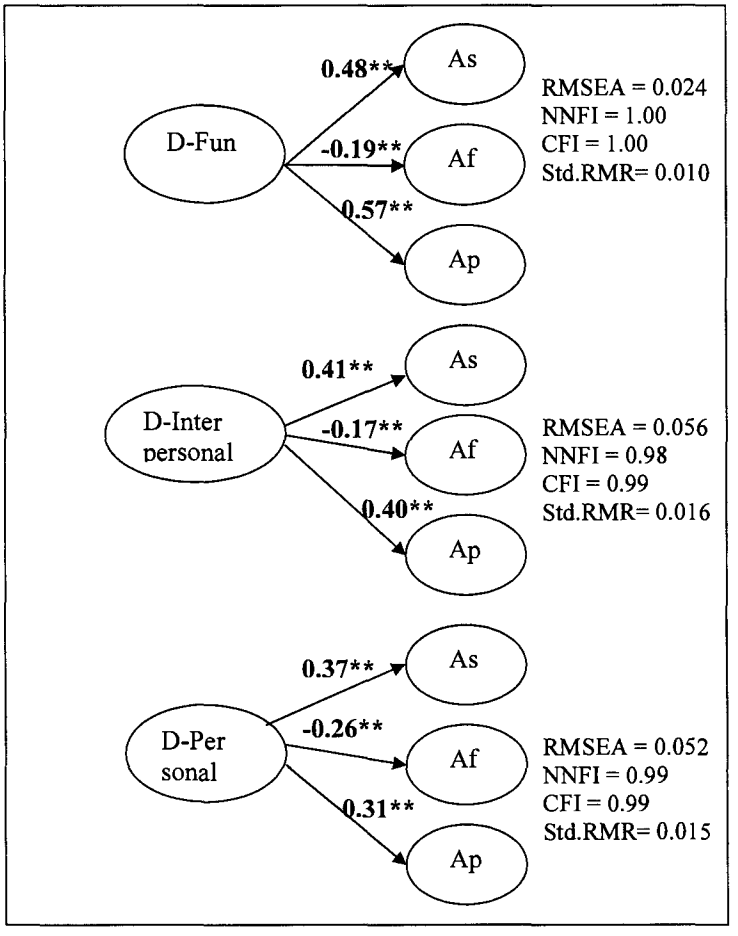
effect on the intention in both situations. Other three antecedents of intention predicted intention differently in the two different situations. For instance, attitude and self-efficacy predicted intention significantly in the situation of preparing a dinner for friends, but not in the situation of preparing a dinner for oneself. Past behavior was a significant predictor of the intention in both situations, but its impact was significantly stronger in the situation of preparing a dinner for oneself than for friends.

Table H.2: Test of partial invariance of path coefficients

Baseline model: equal the four invariant factor loading, $\chi^2(178)=361.57$		
Global attitudes	Equal path 1: EQ GA 1 1 GA 2 5	$\chi^2=371.02$, $\Delta\chi^2(1)$ **=9.45 > 3.84**
Self-efficacy	Equal path 2: EQ GA 1 2 GA 2 6	$\chi^2=386.93$, $\Delta\chi^2(1)$ **=25.36 > 3.84**
Social norms	Equal path 3: EQ GA 1 3 GA 2 7	$\chi^2=361.76$, $\Delta\chi^2(1)=0.19 < 3.84$
Frequency	Equal path 4: EQ GA 1 4 GA 2 8	$\chi^2=391.39$, $\Delta\chi^2(1)$ **= 29.82 > 3.84**

Appendix G: The impact of individual value dimensions in domain-specific values on attitude components

A simple model was run for each value dimension in domain-specific values, as shown in Figure G.1. All the models fit well as shown by the fit indices.



As	– Attitude toward trying and succeeding
Af	– Attitude toward trying and failing
Ap	– Attitude toward the trying process
G-Fun	– The fun dimension in global values
G-Interpersonal	– The interpersonal dimension in global values
G-Personal	– The personal dimension in global values
D-Fun	– The fun dimension in domain-specific values
D-Interpersonal	– The interpersonal dimension in domain-specific values
D-Personal	– The personal dimension in domain-specific values

Note: * $p<0.05$ ** $p<0.01$

Figure G.1: Relation between individual dimensions in domain-specific values and attitude components

First, the fun dimension had the strongest influences on attitude toward process (Ap) (γ =0.57, p<0.0001). This implies that the more fun people perceived from food prosumption, the more likely they would enjoy the food prosumption process. It also had stronger influence on attitude toward success (As) (γ =0.48, p<0.0001) than on attitude toward failure (Af) (γ =0.19, T-value= p<=0.001). It means that the more fun people perceived from food prosumption, the more likely they would have more positive attitude toward success, and the less likely they would have negative attitude toward failure.

Second, the interpersonal dimension had strong and positive influence on attitude toward success (As) (γ =0.41, p<0.0001), which was consistent with our expectations that As would relate more to the interpersonal- and personal dimensions of domain-specific values. The strong effect from the interpersonal dimension on attitude toward process (Ap) (γ =0.40, p<0.0001) was possible due to the social context of the food prosumption situation, preparing a dinner for friends. The interpersonal dimension had significant but weaker influence on attitude toward failure (Af) (γ= -0.17, p<0.01).

Finally, the personal dimension had relatively strong influence on all three attitude components. As expected, the personal dimension had significant impact on As (γ =0.37, p<0.0001) and Af (γ = -0.26, p<0.0001). Its positive effect on Ap (γ =0.31, p<0.0001) implies that the more personal values one perceived from food prosumption (such as accomplishment or self-respect), the more likely they would enjoy the food prosumption process. In sum, the results show that each individual dimension in domain-specific values had significant influences on all three attitude components.

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