"Is Too Few Really Better Than Too Many?"
Development of the Perceived Human Concentration Scale
and its Impact on the Service Experience.

Frank Pons

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Abstract

"Is Too Few Really Better Than Too Many?"
Development of the Perceived Human Concentration Scale and its Impact on the Service Experience.

Frank Pons, Ph.D.
Concordia University, 2004.

The marketing research on crowding presents conclusive but limited results about the, mainly negative, consequences triggered by crowded situations for the individual or the consumer (Eroglu and Machleit, 1990; Machleit et al, 1994; 2000). On the other hand, the growth of experiential and hedonist products and services (amusement parks, concerts...), in which the crowd may play a positive role on the consumer's experience and the lack of managerial direction to deal with crowding issues in service settings (Stewart and Cole, 2001; Eastman and Land, 1997) call for a more in-depth analysis of crowding issues. Therefore, through findings from other research streams (environmental psychology or sociology) and empirical data, this research aims at filling these existing gaps in the business literature about crowding.

The first contribution of this study deals with the repositioning of human density (also called concentration) as a key concept in crowd assessment and appreciation. A valid and reliable multidimensional measure of human concentration is developed. It gives researchers and managers the opportunity to better understand crowd mechanisms and to control them. In particular, four facets of human concentration, namely privacy, personal space, freedom of movement and perceived density are uncovered and give a more complete definition of what human concentration is. In a second study, the developed scale is used to study the human concentration-satisfaction relationship and key moderating variables are identified (service situation, confirmation/disconfirmation and scarcity of the service experience). Several direct and interaction effects are described. The main contribution of this part of the research refers to the demonstration that this relationship is complex and context-dependent. Crowd can also have a positive influence on satisfaction in specific conditions.

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Dedications

To my parents, Louis and Josette Pons, for constantly encouraging me to pursue my dreams and to my wife Annick for helping me to make my dreams a reality.

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CHAPTER I

INTRODUCTION

This thesis deals with the potential role played by a crowd in a service experience. This first chapter provides an overview introducing the major findings regarding the impact of crowded settings on a consumer's service experience. The objectives and importance of the research are discussed. An outline of the subsequent chapters is also presented.

1. Overview of crowding studies and rationale for the research

Many previous studies (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990; Harrell et al, 1980; Altman, 1975; Stokols, 1972) have acknowledged the considerable interest of studying crowding issues in a retailing environment. Crowding is described as an important environmental factor in consumers' evaluation of the retail experience (Machleit et al, 2000). Most of these studies present conclusive results about the negative consequences triggered by crowded situations on the individual or the consumer (Eroglu and Machleit, 1990; Machleit et al, 1994; 2000). While crowding effects seem well identified in sociology or environmental psychology, the empirical study of the impact of a crowd in the service experience is limited in marketing research. Indeed, crowding is often presented as a secondary variable, only meaningful in very specific circumstances (Hui & Bateson, 1991; Bitner, 1992).

However, the growing position occupied by experiential products and services on the market and in marketing research (Holt, 1995; Donovan et al, 1994; Martin, 1996, Wakefield and Blodgett, 1994), as well as several concerns made about the lack of managerial direction to solve or use crowding issues (Stewart and Cole, 2001; Eastman and Land, 1997), justify that a closer attention should be devoted to this topic. In particular, the development of hedonist type of services or events (amusement parks, concerts...) where the crowd plays a positive role on the consumer's experience suggests a need for further research in order to better and fully understand consumption processes involving crowded situations (Holt, 1995; Brown et al, 2000). In addition, the nature of our modern life, in which population in cities grows fast, reinforces the importance of crowding issues in everyday life and the need to adequately understand social and psychological processes involved in the concept of crowding. Consequently, the crowding literature, particularly in sociology and psychology, tremendously developed in recent years (Stott and Drury, 2000; Felmlee and Sprecher, 2000; Brierley Newell, 1998; Evans et al, 2000). However, the marketing field has not yet used most of these results and might benefit from their integration in new frameworks regarding crowding issues in a commercial setting. More specifically, gaps in the business literature regarding concept definitions and impacts of crowds on consumers' satisfaction with a service experience call for a more in-depth analysis of crowding issues.

2. *The objectives of the study*

Using developments in other areas of research, this study aims at broadening the vision of a crowd that we have, as well as its effect on services experiences and its role in services environment. The main objectives of this research are twofold.

First, an in-depth analysis of the crowd literature should allow a clear understanding and positioning of crowd-related concepts. In particular, through the study of the concepts of crowding and density, we will explain how the focus of studies on crowd impact should be repositioned toward the concept of human density (human concentration) in a service setting instead of the concept of human crowding. Human concentration in a service setting should be given a central role and this research aims at explaining why it is such an essential component in the study of crowd impact on the service experience. In fact, previous simplistic conceptualizations failed to capture the complex aspects of this concept. Indeed, in most of these studies, perceived density is simply operationalized as the number of persons in a given space and wrongfully labeled crowding and then conceptualized as an affective evaluation of a crowded situation, in which basically only negative feelings are expressed and measured at the individual level (Harrell et al, 1980; Eroglu and Machleit, 1990). Therefore, the first objective of this research is to develop a measurement tool that would allow researchers and practitioners to better understand, conceptualize and estimate the perceived human concentration in a service setting. This multidimensional scale should capture the different facets of having a large group of people in a service setting. The proposed conceptualization would tap into several different psychological components of density. This

reconceptualization and change of focus should fill the gap left by previous studies and allow researchers to disentangle the concentration measures from their effects on consumers'affective reaction. The practitioners and researchers would then be able to deal more adequately with problems associated with the number of people and their role in a service setting.

The second objective of this study is to develop a model that describes the relationship between human concentration and consumer's service satisfaction. This model should include the latest findings in the literature such as the importance of expectations in the evaluation of the situation (Machleit et al, 2000) or the mediating effect of the affective responses of the consumers (Holt, 1995). In addition, the proposed model aims at helping to clarify the dual role that a crowd can have in a service environment. Indeed, if crowding can be defined as a consumers' negative emotional state triggered by an excessive density (concentration) of people, there is almost no mention in the business literature of the positive emotional state that excessive density can also trigger on specific occasions (concerts, sporting events, etc). Previous studies mostly deal with the negative role of the crowd in a commercial environment (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990; Harrell et al, 1980) and there is an urgent need for a better understanding of the other side of the equation. Hence, this research intends to specify and study potential influencers that may moderate the relationships between human concentration and different types of responses (affective or behavioral, positive or negative) that consumers may have toward crowded service environments. Through this study, conditions leading to positive responses to highly concentrated service settings should be identified. These

results should complement the traditional findings presented by previous researchers (Harrell et al, 1980; Eroglu et al, 1990) and contribute to a better understanding of crowded settings with positive outcomes (affective and behavior) for the consumer.

In broader terms, this research focuses on the concept of perceived human concentration and investigates the psychological processes that lead to its formation, the nature of the concept itself as well as its implications for consumers. In this study, the perceived human concentration is seen as a proactive entity, which has an impact on the overall quality of the consumer's service experience.

3. The Roadmap

Building on findings about the role of crowds in service settings, this thesis particularly investigates the nature of the human concentration (density) concept and then how consumers deal with a crowd in a commercial environment. The study focuses on what consumers perceive, how they are affected by a crowd and why they may differ in their overall crowd perception. Throughout the paper, micro-processes are described, specific hypotheses are made and the conceptual framework is gradually built.

Through the presentation of the current state of development of the crowding literature in marketing, *Chapter 2* attempts to present and explain some of the limitations of these previous studies. These highlighted gaps pave the road for the rest of this research.

Using theoretical bases from other disciplines (mainly sociology and environmental psychology) and taking into account services marketing literature

limitations, *Chapter 3* proposes to reconceptualize the individual processes involved in customers' crowd encounter within a service setting. In the first part of this chapter, each concept is clearly defined, the central role of density (concentration) is presented and measurement issues are considered. Formal hypotheses are made regarding the measurement of human concentration. In the second part of the chapter, the relationship between human concentration and service satisfaction is described. Several potential moderators (situational, personal or interpersonal) are introduced and formal hypotheses are posited.

Chapter 4 focuses on the empirical testing of measurement hypotheses. First, a detailed methodology is given for the human concentration scale development. Then, the results are analyzed and dimensionality, reliability and validity checks are performed. New scale potential applications are then discussed.

Chapter 5 deals with the empirical testing of a model of crowd impact on service satisfaction. First, the methodology used for this study is described. The previously developed human concentration scale is used and applied in this study. Analysis of results is then presented and results are discussed.

Chapter 6 summarizes the key conceptual developments brought by the proposed model and presents potential managerial implications as well as contributions of this research to the field of services marketing. Limits of the research are also presented.

CHAPTER II

CROWD ISSUES IN MARKETING

1. Customers in the service experience

As early as 1981, Booms and Bitner included people as important actors of a service delivery in their seven Ps' conceptualization. Even with the growing importance of on-line services, service encounters still constitute a major issue in services marketing research (Bitner, 1990; Surprenant and Solomon, 1987; Price et al, 1995). Metaphorically called *"the moment of truth"* (Grönroos, 1990; Zeithaml and Bitner, 1996) when being related to *"the contact situation between a service customer and a service provider"* (Stauss and Mang, 1999), their success is essential to ensure the service delivery process and the overall quality of the service experience.

In addition to the customer-provider interaction, the service encounter appears to be a more complex phenomenon that may include a wide array of elements. In a broad definition, Shostack (1985) defines the service encounter as a *" period of time during which a consumer directly interacts with a service"*. Indeed, any type of interaction, such as interactions with physical facilities, service systems and other customers, found at a service boundary may influence the service experience (Grove and Fisk, 1997; Stauss and Mang, 1999). Iacobucci (1998) suggests that customers-customers interactions in the service experience can be viewed, in some circumstances, as key determinants of the overall customer satisfaction (Jones, 1995, Martin, 1996). He cites as examples theatrical performances in which audience

members' attitudes and numbers can contribute to enhance the enjoyment of other consumers whereas similar behaviors or conditions in an airline flight, for instance, can, on the contrary, ruin the other consumers' experience. If customer-employee interactions, along with relationship marketing issues, have been the main focus in the services literature over the past few years (Kellogg and Chase, 1995; Mohr and Bitner, 1995; Hochschild, 1983; Ashforth and Humpfrey, 1993; Dubé, Chebat and Morin, 1995), customers-customers interactions remain an understudied topic in the services marketing area (Harris et al, 1995; Iacobucci, 1998).

Compared to the overall number of articles published in services marketing, only a limited number of studies deal with inter-customer interactions. Many of these articles mainly focus on the negative aspects of having consumers who share the service experience with others. In this stream of research, the interaction between customers is essentially perceived as a noise or a disturbance in the service delivery. These studies are particularly concerned with waiting line issues (Schmidt et al, 1992; Hui et al, 1997, 1998) or critical incidents in services delivery (Edvardsson, 1992; Grove and Fisk, 1997). This negative impact of other customers in the service context is described either at the individual level, where rude or unexpected behaviors from others spoil the nature of the service, but also at the more aggregate level, where a high concentration of people (crowd) in the context give negative cues about or also alter the experience (Grove and Fisk, 1997). On the contrary, only few articles mention (not as key aspects) a positive contribution or an enhancement of the service experience as a direct result of other customers in the service factory. These articles essentially deal with experiential products such as river rafting, baseball or sports

spectatorship and underline the potential contribution of participants in creating an enjoyable experience (Price et al, 1995; Holt, 1995; Eastman and Land, 1997). Furthermore, in all the previous articles, customers-customers interactions are never the main focus of the study. Most of the time, they are barely noticed and at best they are considered as artifacts (Wakefield and Blodgett, 1996) or moderators/mediators intervening in the service experience (Hui and Bateson, 1991).

2. Review of the main marketing contributions to crowd issues

If there are several studies about individual's impact on the service delivery process (employees, individual customers), only a very limited number of authors in the marketing literature give a central role to the crowd's impact on the service experience. They are mainly interested in the effects of a high/low number of customers in a service setting and they focus on the concept of crowding. I will now describe the main contributions of each of these studies and try to summarize the gaps that they fail to fill in the study of a crowd in a service setting.

2.1. Crowding influence on shopping behavior: the first empirical attempt

Harrell et *al* (1980) presented the first research paper in marketing in which the impact of a crowded setting on consumer behavior was tested. The researchers acknowledge the importance of focusing on the number of people in a shopping environment to better understand patterns of behaviors that consumers may display. In this study, Harrell et *al* borrow theories from sociology and psychology (overload

theory and behavioral constraint theory) to explain how crowded environments may alter individuals' (consumers') behaviors. They strongly suggest that consumers perceiving crowding conditions use adaptation strategies such as adjustments in shopping time, lower numbers of interactions with other individuals during the shopping experience (employees or consumers) or choice to rely on familiar brands in order to cope with the crowded environment. They also suggest that crowding influences the shopping experience of a consumer:

> *"Clearly, environmental conditions- specifically physical density and crowding- may influence the consumer's satisfaction with the shopping trip, but also several perceptions of a store's image."* (Harrell et *al*, 1980).

Their propositions are summarized in *" a model of crowding"* (figure 1).

Their path analysis shows interesting results suggesting that crowding has an impact on the shopping experience of consumers. More precisely, consumers in crowded situations use adaptation strategies and modify their shopping habits in order to cope with the environment and to preserve, as much as they can, the quality of their service experience. The researchers insist on the negative impact of crowding in a service situation but also suggest that helping the consumers' use of adaptation strategies may increase their satisfaction with the experience. This may be an alternative for management to the direct reduction of density.

Other interesting issues in this article deal with the measurement and concept definitions used by the authors. They acknowledge the psychological component of perceived crowding and make an attempt at considering the concept as multidimensional (feelings of closeness and restricted movement). Their scale

presents a low reliability indicator and they do not perform any kind of validity check. Moreover, they consider density as a purely physical concept measured by the number of individuals in the store during the experiment. They underline the weakness of some of their measurements.

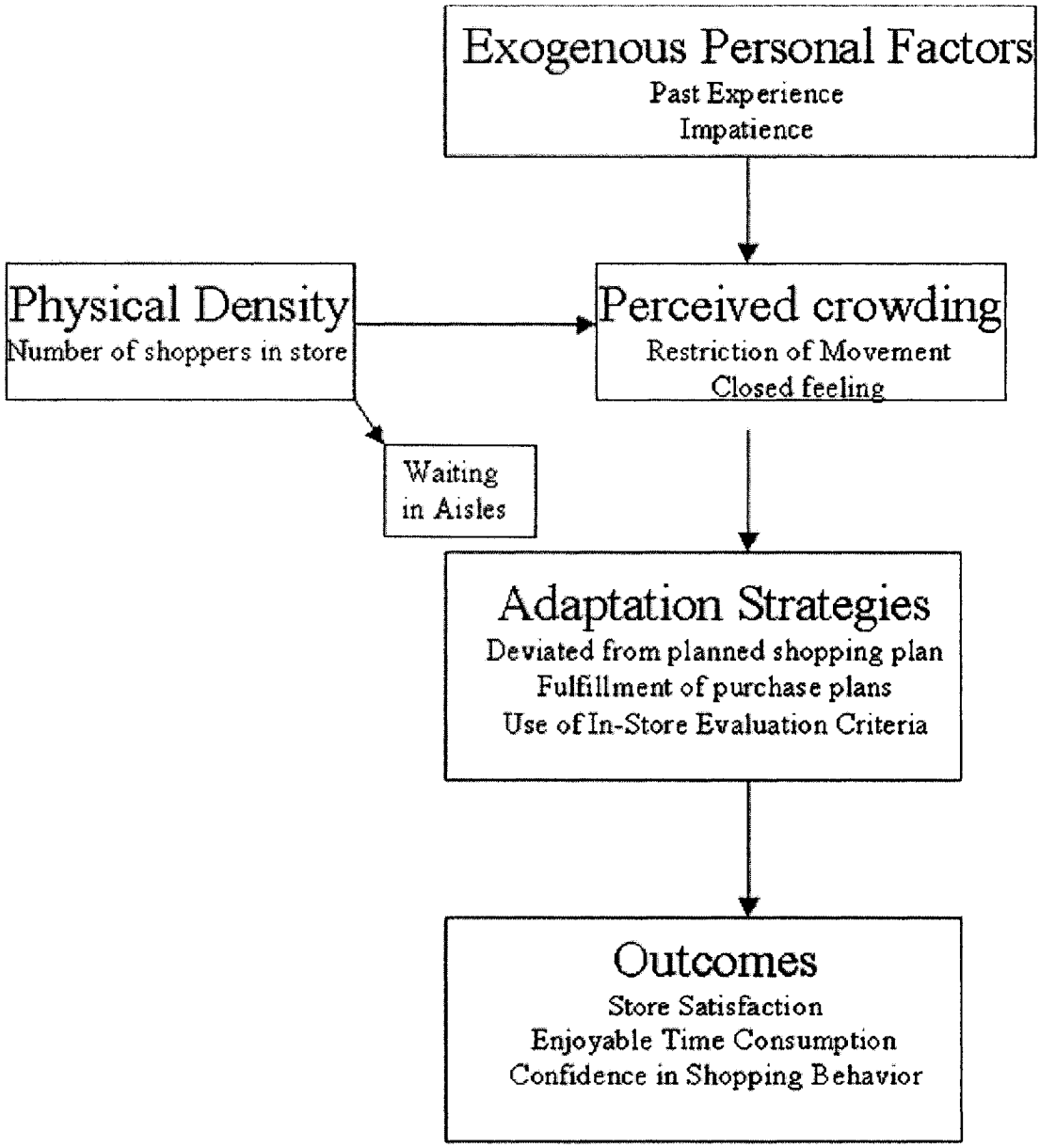


Figure 1. Buyer Behavior under conditions of crowding
(Adapted from Harrell et al, 1980, Journal of Marketing Research)

Finally, they make a very interesting statement showing the difference between density and crowding:

> *"Density alone does not produce adaptation behaviors. Only when it produces perceived crowding do shoppers act. Perhaps, then, environmental designs can be created which provide for increased density but lessen the feeling of being crowded."* (Harrell et *al*, 1980).

This position suggests that high density is different from crowding. High density by itself may not be bad for consumers whereas crowding is indeed a very negative state that needs to be taken care of by the individual.

2.2. For a better understanding of retail crowding's influence on consumers: the main conceptual contribution to crowding's conceptualization.

Eroglu and Harrell (1986) suggest interesting avenues about the potential impact of a crowd in a service setting. Using research in sociology or environmental psychology, they acknowledge the importance of the crowd in a retail setting and more importantly, at the theoretical level, they do not only focus on the negative consequences for an individual in a crowded setting:

> *"The positive as well as the negative effects of crowding in terms of encouraging and inhibiting shopping activities await investigations...perceptions of retail crowding could help managers and researchers."* (Eroglu and Harrell, 1986)

Furthermore, they should be praised for their proposition of an extended model of retail crowding. This model respects theoretical mechanisms described in other literature streams and gives great insight on the potential impact of a crowd in a retail setting (figure 2). It also underlines the importance of antecedents that may *"determine subsequent retail density and crowding"*. The authors make propositions regarding four sets of variables namely environmental cues, shopping motives, constraints and expectations. This research offers the first detailed and applicable conceptualization of retail crowding mechanisms.

However, the proposed conceptualization and the operationalization of their research also lead to several drawbacks that hinder the research on crowd impact in a commercial setting for the past ten years.

First, in line with processes described in sociology and environmental psychology literature (cf next chapter for a detailed definition), their model clearly defines crowding as a negative affective evaluation. *"Crowding is the negative subjective evaluation of excessively high densities"* (Eroglu and Harrell, 1986).

This definition of crowding and the positioning of this concept as the central issue in their study lead to the skewed vision of the impact of a crowd on individuals toward the negative pole of consequences for the consumer. Indeed, it seems quite difficult for these authors to demonstrate any potential positive outcomes related to high-density environments by working mainly on crowding issues, which are defined as negative affective evaluations of the crowd. Therefore, they limit the scope of customer-customer interactions studies in the case of crowded settings to the negative impact on consumers' satisfaction with their service experience.

Second, the stream of research directed by these authors also logically stresses the major role of the concept of perceived density. It is defined as *"the subjective estimate of the number of people, the space available and its organization"* (Rapoport, 1976). They also acknowledge the depth and the complexity of this concept with social and spatial (physical) connotations. However, they do not make any proposition regarding this concept but rather focus solely on the negative affective evaluation (crowding) of a physical number of persons before attempting to capture the whole meaning of perceived density at a more neutral level. In fact, they jump to the evaluation of a concept before getting a complete understanding and conceptualization of what this concept is.

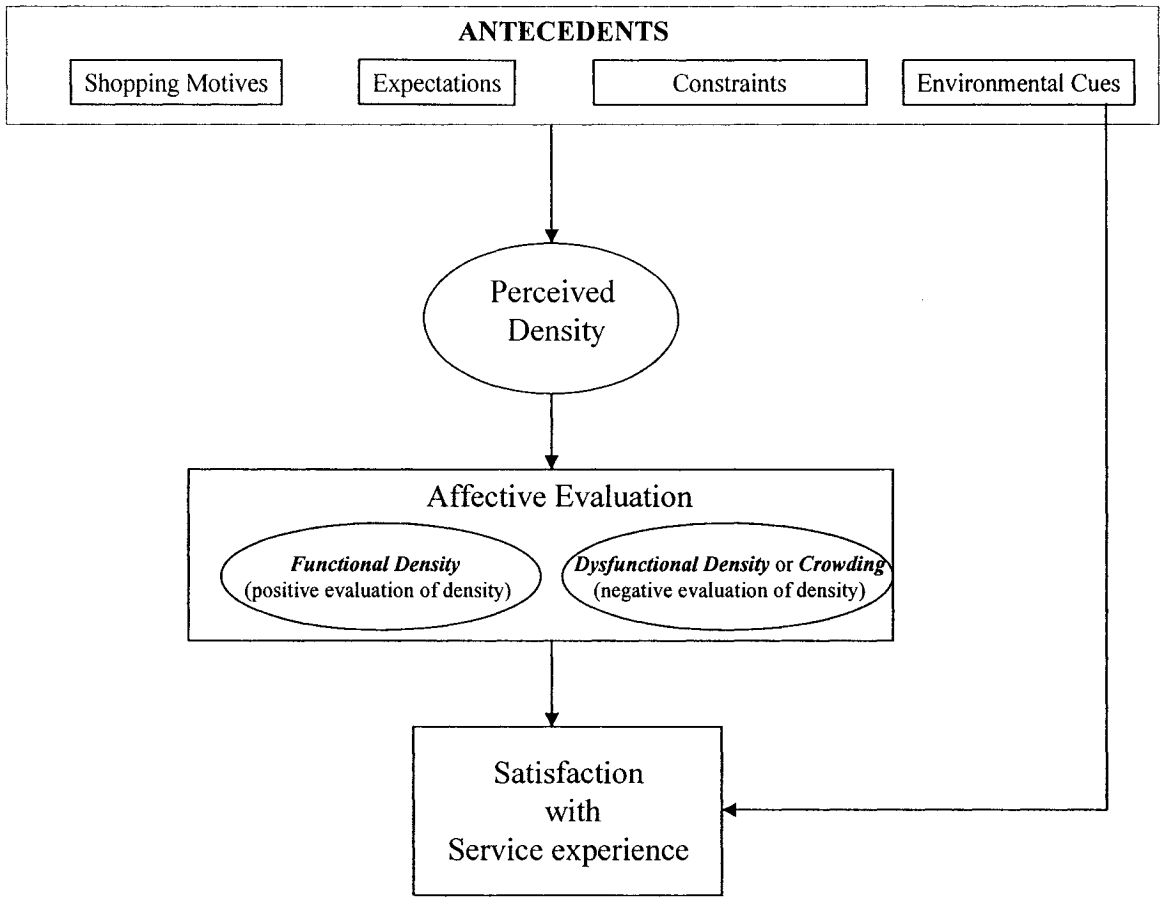


Figure 2. An extended Model of Retail Crowding
(Adapted from Eroglu and Harrell, 1986, Journal of Retailing)

2.3. From conceptualization to empirical testing: Application of Eroglu and Harrell's model

In their study, Eroglu and Machleit (1990) propose to empirically test the propositions made in the model developed by Eroglu and Harrell in 1986. In this study, they posit formal hypotheses that are solely related to crowding and not density and that focus on the impact of antecedents variables such as perceived risk, time pressure or shopping motives of consumers during their shopping experience on the level of perceived crowding and their dissatisfaction regarding the service situation.

In fact, the authors simply manipulate density as an independent variable (condition) with different levels of crowd in a setting (i.e number of persons) in their operationalization of the research.

The methodological part of the article offers an interesting contribution. The authors make a strong case of cautiously developing different levels of density by using consumers' feedback and reactions to visual stimuli (slides), showing that density is a perceived, subjective concept rather than an absolute, objective one. They also use a role-playing scenario technique following environmental psychology methods (McClelland and Auslander, 1975). Their strict methodological approach in terms of experimental conditions paves the way for future studies based on similar methodologies and overcomes potential limits regarding experimental designs for the study of crowding issues.

Their main contribution lies in the ability to demonstrate that high density leads to intense crowding feelings and then to dissatisfaction. They also show that some so-called *"antecedents"*, mainly shopping motives (task versus non task shopping) and perceived risk, intensify crowding feelings and dissatisfaction for highly dense

environments. In general, they only focus on crowding itself (negative evaluation of the dense condition) and its impact on satisfaction (negative). They only test a limited part of the Eroglu and Harrell proposed model (1986), omitting the fact that density may play a more important role and that the relationship between density and crowding may not be as simple and constantly negative. To conclude, they suggest several interesting potential future research directions, particularly some related to the role of expectations of crowding in the influence of crowding on shopping outcomes. Moreover, they underline the fact that more research needs to be done in the area: *"...aspects of retail crowding presented here will inspire researchers to further examine this under-researched topic."* (Eroglu and Machleit, 1990)

2.4. Density, Perceived Crowding and Service experience: Role of other variables

Hui and Bateson' study (1991) focuses on the role played by the perceived control of the consumer during a service experience. This variable is identified as mediating the effect of two situational characteristics (consumer density and consumer choice) on emotional and behavioral reactions of the consumers. The authors provide two interesting insights regarding the impact of density and perceived crowding on the service experience.

First, they introduce the notion that high density may not always lead to negative affective evaluation (increased perceived crowding). They show that the degree of control an individual thinks he has over a service situation may modify the usual negative relationship between density and perceived crowding (*"...an unpleasant feeling that is experienced by an individual."*). They also state that service settings

(bar versus bank) may contribute (as a moderator) to an increase in the perceived control over the situation and then lower the typically negative impact of high density on service experience described in previous streams of research. This result is the first mention in the marketing literature of a potential dual effect (positive and/or negative) of high density on a service experience.

Second, they introduce emotions as mediators between perceived control or perceived crowding and behavioural responses made by the consumers such as satisfaction, desire to affiliate or stay in the setting. This addition is in line with previous studies in environmental psychology in which the emotional reaction to the environment is presented as critical to future behavior of individuals present in the setting (Langers and Saegart, 1977).

Although this article greatly contributes to offer a different approach to the relationship between density and perceived crowding, giving potential explanations regarding differential effects according to moderating variables, the measurement component of the study is very limited. Indeed, there is no real validation of the measurement used for perceived crowding. Moreover, consumer density is considered as a very simplistic independent variable conceptualized only through the estimates and actual number of people per unit area. No mention is made about psychological aspects associated with the perception of density. Finally, even if the authors mention potential positive influences of density on the service experience, they only focus in the empirical study on the impact of perceived crowding, which is a negative feeling, on behavioral responses.

2.5. Measurement Issues: the first validated scale of retail crowding

Following the results of previous studies, Eroglu, Kellaris and Machleit (1994) notice the lack of adequate measurement constructs to capture retail crowding. They acknowledge the fact that most of the researchers have been working on the impact of high density on perceived crowding and satisfaction without really considering how these concepts were measured. In their research however, they do not consider the measurement of perceived density but rather focus only on retail crowding.

They propose a scale that is composed of seven items covering two dimensions, namely human and spatial crowding. They build their conceptualization on a classification proposed in environmental psychology but which is initially related to the concept of density in this literature rather than to crowding (Loo, 1973; Altman, 1975). They offer evidence of reliability and validity (discriminant and convergent) for the developed scale. In their last study, they perform a confirmatory factor analysis that fits the data well for the two samples used, even if the sample sizes are quite limited (n=117 and n=114). Their retail crowding's construct has a human dimension with 4 items and a spatial dimension with 3 items. The two dimensions are significantly and positively correlated (.53). The authors even suggest some evidence of nomological validity through the negative correlation between perceived crowding and the satisfaction with the shopping experience.

The main contribution of the authors lies in the fact that they consider, as suggested in other streams of literature, that density and crowding issues are more complex concepts than only a high number of persons in a given situation. They make an effort to show that stressing affective state (perceived crowding) may cause the extent to which the environment design is perceived as restrictive (spatial) or the

individual seems disturbed by the perceived crowding (human). This two-dimension approach opens the door in future research to the study of their differential influence on the perceived crowding-satisfaction relationship. However, the authors shallowly study the human dimension content in spite of claims regarding the complexity of this dimension in other areas such as environmental psychology. Finally, they only emphasize the negative consequences of the situation (bad or negative feelings such as feeling cramped or confined: perceived crowding) and do not treat the measurement of the density concept, which is also described as a key variable in their own previous model.

2.6. Latest development regarding the relationship between perceived retail crowding and satisfaction: A more complicated link

In the last published research concerning crowding issues (Machleit, Eroglu, and Mantel, 2000), the authors acknowledge the fact that the relationship between perceived retail crowding and the satisfaction with the service experience may not be as simple as suggested. They consider several mediating and moderating variables that may alter the previously described negative relationship between these two variables and test these effects in three studies (two field studies and one laboratory experiment).

Building on Hui and Bateson's findings (1991), they first show that emotions mediate the relationship between perceived crowding and satisfaction with the service experience. This finding is interesting and consistent with previous findings about the impact of the store environment and the consumer's satisfaction (Sherman et *al*, 1997; Wakefield and Blodgett, 1994) but does not drastically change the classical

relationship tested. More interestingly, they introduce the role of three potential moderators.

The first one is very briefly developed and deals with the role played by the expectations of a given crowd level that consumers may form prior to the service experience. They posit that when perceptions are met or fall short of expectations, consumers should be less dissatisfied than when they exceed expectations. Their rationale is based on the confirmation-disconfirmation model and on the assessment that many consumers in a retail setting constitute a negative attribute for the experience. Unfortunately, they offer inconclusive results regarding this hypothesis, as they do not manipulate this variable in the laboratory experiment, and are unsure about expectation levels or/and have very small sample sizes in the two other studies.

The second variable is the type of store where the crowded situation takes place (discount versus typical store in this study). They also find very contradictory results regarding the moderating effect of this variable on the perceived crowding-satisfaction relationship but their results call for a more detailed exploration of the influence. This type of variable is very similar to the situational variable described by Hui and Bateson (1991).

Finally, they find that individual variables (personality traits such as tolerance for crowding in the study) may also moderate the previous relationship as well as crowding perceptions for each individual level.

In this study, the authors try to explain how the relationship between perceived crowding and satisfaction may be modified. This is the most developed attempt to show that this relationship is not that simple. However, their variable definition and

operationalization greatly limits potential results. Moreover, their correlational analysis does not offer any clear evaluation of the proposed path of relationships between concepts and of the moderating effects.

3. *Summary*

As shown previously, the research on crowd's impact in a retail (service) environment is a topic of interest in marketing. However, the research is limited and incomplete. Indeed, the first studies summarized in the previous pages clearly present a model where human (consumer) density is the driver of the following relationship with service environment satisfaction. Surprisingly, all the subsequent research in the area deal with perceived crowding (a negative affective state) rather than density. Most of the attempts in terms of measurement or modeling are related to perceived crowding. Density is neglected in spite of theoretical support for its major role in the relationship with satisfaction. These attempts fail to capture and to measure perceived density through conditions that characterized the concept, other than the only number of persons. Therefore, they lose some key components linked to the perception of a crowd by a consumer. This is the first gap that needs to be address by additional research. Moreover, with the emergence of experiential products and services, more and more dense settings contribute positively to the customers' experience. Ignoring practical facts, all the articles previously presented deal with the negative consequences of having a crowd in a service setting. This is clearly explained by the fact that they focus on a negative affective state (perceived crowding) that logically leads to dissatisfaction. This gap also needs to be addressed. The focus on a neutral

estimation of a crowd level (density) instead of a negative affective evaluation (crowding) may be a solution. The identification of conditions (moderators) leading to positive outcomes in crowded settings may be another avenue but this question surely needs to be further developed. This study tries to address these issues as well as fill these gaps in the services marketing literature.

CHAPTER III

THEORETICAL FOUNDATIONS AND RESEARCH HYPOTHESIS

Most of the researchers in marketing acknowledge the fact that the study of crowd issues needs a comprehensive approach based on contributions from other disciplines to include all facets of crowd's impacts and a better understanding of customer-customer interactions (e.g. Eroglu and Harrell, 1986; Machleit et *al*, 2000). In order to build upon previous findings and incorporate fruitful avenues for future research, a detailed review of other disciplines' views of the concept of crowd and its role in our society are presented hereafter and incorporated to develop research hypotheses in this study.

1. *The Complex nature of crowd issues*

The first concern related to the complexity of crowd issues deals with the vocabulary used in studies about crowding. Indeed, the literature on social interactions in a given physical setting as well as the business literature use terms such as density, crowding or crowdedness synonymously in certain cases whereas they are used for completely different purposes in other situations (Heimstra and Farling, 1978; Altman, 1975; Sinha and Nayyar, 2000). Several researchers have fought against this lack of uniformity by giving clear definitions of each concept (Rapoport, 1976; Stokols, 1972) and by illustrating them through examples

(Wooldredge, 1997). However, the interchangeable and inadequate use of these terms in numerous other studies contributes to the multiplication of incoherencies in results and ambiguity in researchers and readers' minds. This is considered as one of the main source of contradictory findings regarding the crowd influence on the perception of, and the satisfaction with, a given physical environment (Baum and Epstein, 1978).

The second concern regarding crowd and crowding issues deals with the wide array of different outcomes that a crowd, or crowded situations, may trigger. Indeed, in everyday life, there are many occasions in which people feel or describe themselves as crowded (football game, store, elevator, ...). In some cases, these situations are stressful or unpleasant but these same situations can also lead to exciting atmospheres and pleasant encounters. In fact, the same crowd levels or density conditions may lead to opposed feelings for the same individual (Altman, 1975; Manning and Valiere, 2001). This complexity is well captured by this description of crowded environments where there is a *"constant interplay of forces in which other people can be simultaneously positively and negatively gratifying"* (Milgram, 1970; Altman, 1975).

The third complex aspect is related to the number of people that is necessary to trigger crowding perceptions (a negative affective state). The main stream of research regarding crowd issues is based on the fact that the more people there are in a setting, the more one should feel crowded. However, studies in sociology and anthropology show that one can feel crowded in the same manner by two persons or by thousands of individuals. This is very important in order to better understand that density may

not only be a physical variable (number of people) but rather a psychological one with different facets. Another potential explanation for conflicting results and contribution to this complexity may lie in the fact that crowding has been used, and its consequences studied, to depict environments such as cities, apartments, rooms or even elevators that are very different in terms of size and/or types of interactions. Based on studies that are not comparable, the task of generalization becomes then very difficult or even impossible. In the same vein, comparisons are made to describe different situations in which people either want more physical space or are blocked from resources or even trapped for long period of time (Altman, 1975, Wooldredge, 1997). Once again, it is very difficult to compare results of such different studies; this mix of results greatly contributes to the impression that issues related to crowding are very complex.

These examples clearly demonstrate that one needs to carefully consider the specific context and what is meant by crowd and crowding before making any general statement regarding these concepts. As summarized by Altman (1975), *"to understand crowding, therefore, requires an unraveling of its dimension and a recognition that it is a complex idea"*.

In the next part, the conceptual definitions of crowd related issues (density and crowding) are detailed using the sociology and environmental psychology literature. This should give solid foundations for this research and justify hypotheses that will be further made in the study.

2. *Crowding and Density: Concept Definitions*

2.1. Density: Definition and Key Findings

Since the beginning of the seventies, several researchers in sociology have tried to make a clear distinction between the concepts of crowding and density (Stokols, 1972; Rapoport, 1976, Choi et *al*, 1976). Stokols (1972) was the first author to provide a conceptual distinction between the two terms based on a *physicalist-psychological* criterion (Baum and Epstein, 1978; Altman, 1975).

In a sociological approach, he limits *density* to a strictly physical meaning: *"the number of individuals per unit of space"* (Stokols, 1972). Several sociological analyses apply this definition and use undifferently a wide variety of density indicators based on the definition such as people per city, per census tract or per apartment, without considering potential differences in their nature and obviously in their consequences for people (Baum and Epstein, 1978; Altman, 1975). These studies lead to strikingly different results and effects and suggest that all "high density" or "low density" contexts are not identical and cannot be grouped under a same denomination (Galle, Gove and McPherson, 1972; Booth, 1976). Therefore, researchers try to differentiate dense situations according to shared conditions. For instance, Zlutnick and Altman (1972) propose some density profiles based on the level of density in the case of either an outside condition (macro situation such as city or census tract levels) or in the case of inside conditions (micro situation such as rooms or apartments). Also, Day and Day (1973) suggest the consideration of geographical factors (distribution and patterns of population) to ensure similarity in conditions and to compare dense situations implications. Since then, a great deal of

attention has been devoted to the nature of the specific density situation in which the research is performed (Manning and Valliere, 2001; Evans and Lepore, 1993; Klofas et *al*, 1992).

In a similar fashion, several authors make a distinction between *social* and *spatial* density (Loo, 1973; Altman, 1975) when describing the context. *Social density* involves a consistency in the actual space or physical area while the number of individuals in this space may change to give different levels of density. In this case, the social interaction aspect of dense settings is at stake. On the contrary, *spatial density* involves an identical number of individuals in a varying space or area. Therefore, features such as freedom of movement or relationships with space are more pertinent. However, only very few studies report differential impacts based on these distinctions (Baum and Epstein, 1978). In summary, if the definition given by Stokols (1972) offers a clear positioning of the concept, it also raises several concerns among other researchers, particularly those using psychological approaches to define the term. Indeed, his definition does not answer all the questions surrounding the concept of density and the way it is used in research. Moreover, it totally eludes the fact that perception plays a central role in density definition. Indeed, it is important to realize that density is more complex than the definition given by Stokols and it is crucial to better conceptualize it in order to adequately study and understand the consequences of dense settings.

In a more psychological approach to crowd studies, Rapoport (1975) emphasizes the importance of the perceptual component of density. He considers that there is a missing link between *"the physicalist features of density and psychologically*

negative states of crowding". Indeed, he opposes the restrictive vision of Stokols and pushes for an enlarged vision of density (Rapoport, 1976). His definition begins with the number of people per unit area but goes beyond this simplistic vision with the inclusion of psychological and social factors. He argues that more than simply density, perceived density should be a key concept in the study of dense environments and their consequences for individual. Therefore, he repositions perceived density as a central and psychological process made by the individual rather than an objective measurement of the number of individual per unit area.

Other researchers acknowledge the variety and complexity of high-density conditions (Sundstrom, 1978; Galle, Gove and Mc Pherson, 1972) and the potential role of individual perceptions in the conceptualization of density. They underline the importance of identifying *"variables that accompany or result from high density"* (Sundstrom and Altman, 1972). They suggest that these variables indicate and characterize the high-density situation at stake. These indicators reflect density and should help to explain and better understand the link between density and crowding, particularly why high-density may not always produce stress (Altman, 1975; Freedman, 1975; Sundstrom, 1978).

However, several researchers criticize this position and more particularly Rapoport's definition by arguing that it is confounded with the psychological meaning of crowding (Heimstra and MacFarling, 1978). Rapoport gives an interesting clarification to their claim:

> *"The difference is the following. Density is the perception and estimate of the number of people present in a given area, the space available, and its organization, whereas crowding or isolation (which we could call affective density) is the evaluation or judgment of that perceived density"* (Rapoport, 1976).

In the eyes of Rapoport, both density and crowding are psychological processes but density is only an **estimate** tainted by many personal or social variables (learned processes or values for instance) but mostly neutral in terms of affective judgment. On the other hand, crowding is mainly an **affective evaluation** of the level of perceived density. Interestingly enough, this last definition of crowding is in line with the one given by other researchers (Stokols, 1972; Altman, 1975; Wooldredge, 1997; Manning, 1999) without the constant negative connotation attached to crowding that is detailed in the next section. Rapoport's definition adds weight to the neglected concept of density without questioning the nature of crowding.

2.2. Crowding: Definition and Key Findings

Most researchers agree that density and crowding are two distinct concepts (Stokols, 1972; Altman, 1975; Rapoport, 1975). As underlined previously, crowding is usually associated with a psychological state that they opposed to the physical, cold concept of density. More importantly and in line with Rapoport's (1976) position, crowding is considered as an affective evaluation, a judgment of a dense situation (Eroglu and Harrell, 1986; Stokols, 1972). It is also associated with negative connotations or stressful feelings that can be attributed to the lack of

physical or psychological space (Stokols, 1976), the excess contact with others (Desor, 1972) or disharmonious psychological processes (Esser, 1972). Throughout numerous studies, crowding represents an unpleasant, stressful and negative experience. The following definitions support the present position:

- *"Crowding is a state of psychological stress that occurs when a person's demand for space exceeds the supply"* (Stokols, 1976).
- *"The word crowding conjures up visions of being hemmed in, thwarted, elbowed out of the way. It is loaded with negative connotations"* (Insel and Lindgren, 1978).
- *"Crowding is a negative experiential state associated with spatial aspects of the environment"* (Rustemli, 1993).
- *"Crowding is experienced when the environment is judged as being dysfunctionnaly dense"* (Eroglu and Harrell, 1986).

The consensus in these definitions rests in the evaluative nature of crowding (evaluate density conditions) and more specifically the negative pole of the affective evaluation made by individuals in a dense situation. Even if biased by several personal and contextual variables, perceived density is neutral in essence (what is the level of density that I perceive) whereas crowding seems to represent the negative affective judgment (I do not like this level of density) in a given situation.

Similar to distinctions made for density, several typologies of crowding have been suggested in order to explain potential differences in outcomes triggered by this negative affective state. For instance, Stokols (1972) differentiates between social crowding and nonsocial crowding. In the former case, negative feelings or

evaluations of density are due to the presence of other individuals in the setting whereas the latter represents negative feelings stemmed from physical characteristics of the setting only. Such a typology is presented in the marketing literature through human and spatial crowding, which are terms borrowed from the density definition (Altman, 1975; Machleit et *al*, 1994). Stokols (1972) also differentiates between molecular and molar crowding, which respectively represent micro (individual, small groups) and macro (large scale urban population such as city or county) levels of analysis. As for density, these distinctions underline the importance of qualifying crowding in terms of its characteristics. By doing so, researchers should be able to identify conditions that are indeed comparable, find patterns for specific crowding conditions and avoid incongruence in results. For long, these recommendations have not been followed (Baum and Epstein, 1978) but recent studies in sociology try to control for potential differences in crowding conditions and to concentrate only on one type of crowding at a time. Several examples are found in social psychology and sociology literature (Sinha and Nayyar, 2000; Rustemli, 1993; Wooldredge, 1997; Paulus, McCain and Cox, 1985) and bring good insights regarding crowding conditions and their implications for individuals.

If high levels of density represent some of the reasons that may explain why individuals get into stressful and unpleasant states (crowding) when evaluating the ambient conditions, we can wonder how these negative feelings are triggered and what theoretical bases can explain the phenomenon of crowding. As stated by Baum and Epstein (1978), *"the level of sophistication of formal theories of crowding is not*

very high". However, several theoretical explanations have been presented and they are all related to the concerns of an individual facing unstable conditions (Jain, 1987).

First, some researchers use stimulus overload theories adapted from sociological studies of urban life to explain crowding issues (Milgram, 1970; Altman, 1975; Desor, 1972). In this approach, an individual, confronted with excess in the rate and amount of environmental stimuli compared to an adequate/equilibrium level, would not have the ability to deal with this stressful condition. In this type of situation, the degree of social stimulation is higher than the optimal and it creates an overstimulation (Sundstrom, 1978). This overstimulation then leads to feelings of being crowded and individuals will do anything to regain their equilibrium by adopting coping techniques to avoid excessive stimuli (Manning, 1999; Manning and Valliere, 2001; Evans et *al*, 2000).

Second, based on Brehm's (1966) theory of psychological reactance, feelings of crowding occur when density restricts the activities of an individual. The feeling of a behavioral constraint imposed by the situation on an individual (difficulty to move, impossibility to perform a task...) leads to a stressful state defined as crowding. Once again, this constraint breaks the equilibrium/freedom attained by an individual in a non-dense environment (Parsuram, 1996; Champion, 1988).

Third, an alternative explanation given to crowding stems from Barker's ecological theory of human crowding (1963). Once again, compared to an equilibrium (adequate) level of "manning" (number of people in a setting in order to perform a task), he considers that when the number of social roles in a system is greater than the number of participants (undermanning), people do more things, work

harder, feel more committed (Saegert, 1978). On the contrary, situations where too many individuals are present to perform a task (overmanning) led the individual to feel less needed, less important and less valuable (Wicker, 1973).

None of these theoretical bases on understanding crowding has the edge on the other. They are all, more or less, related to a distraction from a particular type of equilibrium and they can coexist or be used individually to explain crowding--negative affective reactions to crowds.

As suggested by several authors (Stokols, 1972, Baum and Epstein, 1978; Sundstrom, 1978; Saegert, 1978), the negative affective nature of crowding seems to lead individuals to negative consequences and towards coping behaviors that may help to reduce the induced stress.

For instance, as results of overload, confinement or loss of freedom, feelings of being crowded lead to outcomes such as stress, anxiety or discomfort. Indeed, the stress is pervasive throughout psychology and biology. Several studies conclude that there are physiological disorders that can be directly linked to the stressful condition of being crowded (high blood pressure (Evans and Lepore, 1993; Koflas et *al,* 1992). Other studies mention an increase in hostility and aggressive behavior (Paulus et *al,* 1985; Wooldredge, 1997; Smith and Haythorn, 1972), a negative effect on the mood of crowded subjects (Griffith and Veitch, 1971) or a negative effect on performance (Glass and Singer, 1972; Jain, 1987). The effect on performance is however inconsistent throughout studies (contradictory results in Rousseau and Standing, 1995 or Freedman, 1971). Overall, outcomes of feelings of being crowded are unpleasant.

In order to break this negative circle and turn the situations into more positive ones, individuals may use adaptive strategies. Several strategies ranging from physical withdrawal from the setting (Manning and Valliere, 2001) or social withdrawal (Evans et *al*, 2000; Baum and Valins, 1977) to displacement (limit visits to the setting, Wooldredge, 1997; Manning, 1999) are used by individuals and have been presented in the literature. Logically, only very few studies mention positive outcomes to crowding situations (Brown et *al*, 2000; Wann et *al*, 1999; Eastman and Land, 1997). It is indeed very unlikely that crowding itself leads to positive outcomes. However, high perceived density (neutral estimation of people concentration) is more likely to trigger positive reactions than the negatively laden crowding. The vocabulary used in crowd related research is sometimes the source of inadequate conclusions where crowding is mistaken for density and vice-versa. It is therefore essential to ensure clear definitions and use of the concepts involved in order to avoid any misinterpretation.

2.3. From Crowding to Concentration : A Change in focus.

As presented earlier, few authors in marketing are interested in the study of crowd impact on consumers (Eroglu and Harrell, 1986, Eroglu and Machleit, 1990). Compared to the impressive stream of research developed in sociology and psychology regarding the same issue and its impacts on the general population, much can be learned from these disciplines in order to improve our understanding of the topic and obtain a better grasp of the concepts involved.

The first observation goes to the careful work done by researchers in marketing to ensure that the definition and use of concepts borrowed from other disciplines is appropriate. In the case of crowding for instance, they adequately use Rapoport's (1976) and others' (Altman, 1975; Stokols, 1972) definition of crowding as a negative affective evaluation of specific density levels. They describe and qualify crowding as being *"a dysfunctional density"*. Moreover, they present the concept of perceived density as a central and major component of the way crowd might impact consumers' experience of a retail setting. Although they acknowledge the major role played by perceived density, the operationalization of their research is focused on the concept of crowding. Ignoring the inherent negative valence of the concept of crowding, they develop a measurement of crowding and then study antecedents and consequences of crowding on the consumer. As a result of the orientation adopted by these authors, the concept of perceived density in their research loses an important part of its content value between the conceptual development and the empirical study. They do not attempt to measure density levels perceived by the consumers but rather use Stokols (1972) physicalist approach, ignoring Rapoport's (1976) perceptual vision. In many of these studies, the assessment of perceived density is oversimplified and, even if methodological efforts have to be acknowledged (Eroglu and Machleit, 1990), this variable is not measured but rather considered as a simplistic construct assessed through the number of people in a given area and used to set different types of situations (high or low density).

On the contrary, perceived density appears to be a richer and deeper concept than the initial and limited role given to density in its physical meaning (Stokols, 1972).

Rapoport (1976), Choi and colleagues (1976) underline the necessity to go beyond this restrictive image to include the psychological processes involved in the perception of density. In fact, they suggest adding several components to the measurement of the classical physical aspect of density by including the individual's mind and experience in the assessment of the level of density. They also reemphasize the neutral nature of perceived density, which is a pure estimation of the density according to the consumer, without any value judgment attached. In short, they push for a more detailed measurement of perceived density, which would include consumers' perceptions of *" degree of enclosure, intricacy of spaces, activity levels among individuals"* (Rapoport, 1976). They describe physical qualities (high degree of enclosure, high activity level) and social qualities (number of people, nature of the group) of density. Few clear propositions have been made in the literature regarding the dimensions that might be considered as reflections of the concept of perceived density. However, several directions can be followed in order to improve the quasi non-existent measurement. Heimstra and McFarlin (1978), along with Rapoport (1976), mention that perceived density should be mirrored by physical features as well as social, personal and psychological displays in a setting in which an individual/consumer stands. They suggest that perceived density should be considered as a multidimensional concept encompassing these aspects.

When talking about density and crowding, few other key social-behavior concepts such as territoriality, personal space, privacy or freedom of movement have been identified and mentioned in the environmental psychology literature. These concepts are measurable and may be considered as visible manifestations of density or even

confounded with it (Worchel and Teddlie, 1976; Baron et al, 1976; Insel and Lindgren, 1978). Research on social behavior and the physical environment have identified these concepts as key variables in understanding how individuals deal with other people in their environment (Baum and Epstein, 1978). These concepts have usually been treated separately and I will summarize, hereafter, their main individual features.

2.3.1 Privacy

Several definitions of privacy are offered in the literature. The first set of definitions deals with the withdrawal or avoidance of interactions. For instance, Bates (1964) positions privacy as *"...a person's feeling that others should be excluded from something which is of concern to him, and also recognition that others have a right to do this"*. It is important to notice in this definition that the concern is not precisely defined and can take different aspects. A second set of definitions emphasizes the freedom of choice regarding personal accessibility rather than the exclusion suggested in the previous definition. For example, Westin (1970) proposes that privacy is *"...the right of the individual to decide what information about himself should be communicated to others and under what conditions"*. He also provides a very interesting categorization of four types of privacy that can qualify the concept more adequately. The first type of privacy is *solitude* that occurs when a person is alone and not available for an encounter or an observation. Then, he cites *intimacy* which occurs when people or a small group of persons (couple) separate from others in order to be alone. *Anonymity*, the third state of privacy, occurs when a person expects not to

be recognized in a crowd, to be an unknown face in a group. Finally, he introduces *"the creation of a psychological barrier against unwanted intrusion"* (*reserve*) that is very similar to selective perception in which people cope with others in the environment by simply tuning others out. These conceptualizations of privacy confirm the complexity of the concept and the different facets that have to be captured in order to understand privacy. If crowding, personal space and density have been the focus of several studies, for long privacy remained quite neglected. Altman (1975) in his theoretical formulation on the environment and social behavior replaces privacy as a central concept: *"...privacy is a central regulatory process by which a person makes himself more or less accessible and open to others..."* He suggests that too much or too little privacy leads to unsatisfactory experiences and that individuals will use mechanisms such as personal space or territoriality to lean toward an equilibrium defined in terms of achieved privacy level. This position is interesting because it is similar to the one of crowding regarding a divergence from equilibrium and adaptive strategies (Jain, 1987; Baum and Epstein, 1978; Hemstra and McFarling, 1978). If Altman's position is very constructive and offers a potential framework for studies to come, the main findings to keep in mind for social behavior research is that concepts such as privacy, personal space, territoriality or freedom of choice are related in expressing social interactions of individuals in a crowd.

2.3.2 Personal Space

In Altman's (1975) view, the protection of an individual's own personal space is a mechanism used to regulate interaction with others and to achieve desired privacy (Baum and Epstein, 1978). Personal space can be simply depicted as an envelope or a

bubble surrounding a person (Hemstra and McFarling, 1978). More formal definitions position the concept as the boundary around the self (Altman, 1975):

- *"Personal space refers to an area with an invisible boundary surrounding the person's body into which intruders may not come.....It has been linked to a snail shell, a soap bubble, an aura, and breathing room".* (Sommer, 1969)
- *"Personal space is the space surrounding an individual where within which an entering other causes the individual to feel encroached, further potentially leading him to show displeasure and sometimes to withdraw"* (Goffman, 1971).

The properties of personal space include an invisible nature of the boundary, an "attachment" of the boundary to the self and a dynamic process in terms of regulation (Altman, 1975; Baum and Epstein, 1978, Sinha and Nayyar, 2000).

Hall (1966) proposes a theoretical approach to personal space that divides the space used in social interactions in four zones. *Intimate distance* (0 to 18 inches) is associated with very detailed information about one person and is generally reserved for very intimate encounters such as lovers. *Personal distance* (1.5 to 4 feet) is the traditional spacing people use in classical social interactions with another individual. According to Hall (1966), the closer your interactions are in this zone, the more intimate people are with you (from very close friends to a simple acquaintance). *Social distance* (4 to 12 feet) is generally the personal distances used for business or social interactions (desk or offices). Finally, the *public distance* (12 to 25 feet) is used

for very formal interactions such as official and public speeches. The communication channels are very much restricted in this case and, most of the time, unidirectional. It is very important to keep in mind that these zones might vary due to personal variables such as culture (Hall, 1966; Sinha and Nayyar, 2000; Paulus et *al*, 1985). It is also important to note that any threat to, intrusion in or disrespect of personal space in general, or any of these zones, may have consequences for the individual. It may lead to verbal (complaint) or non-verbal behaviors (blocking behavior to avoid being disturbed or even leaving the encounter) (McDowell, 1972, Lepore et *al*, 1992; Patterson et *al*, 1971).

It is commonly admitted that personal space represents an essential feature of social behaviors of individuals in relation to their physical environment and social interactions. Some authors present it as a control mechanism used to achieve desired levels of privacy or intimacy whereas some authors simply position it as one of several fixed variables whose states may further influence feelings of being crowded (Singer et *al*, 1998; Karlin et *al*, 1978; Rodin, 1976). In particular, dense environments trigger inabilities to control and limit unwanted interactions for individuals (Baum and Valins, 1973).

2.3.3 Territoriality

Territoriality is also an important concept in social behavior studies. It is related to the desire to possess or occupy portions of a given territory (Stea, 1965; Altman, 1975; Baum and Epstein, 1978). It is closely bounded to the previous concept of personal space but in the case of a territory, the area involved represents *"fixed places*

or geographic area" (Sommer and DeWar, 1963) whereas personal space is attached to the self and therefore moves with the individual.

The study of territorial behaviors has benefited from a long tradition of research in the animal behavior domain. Several researchers are involved in the study of human relationships with "their" territories in everyday life and how similar it can be compared to animal studies. In the seventies, these scientists made a great contribution to this field with several reviews on human territoriality (Altman, 1975; Edney, 1974, 1976; Sommer, 1969). Like many concepts in psychology, there is no commonly accepted definition of territoriality (Baum and Epstein, 1978). The following statements are samples that have been proposed by researchers dealing with human territoriality.

- *"Territoriality involves the mutually exclusive use of areas by persons or groups"* (Sundstrom and Altman, 1972)

- *"A territory is a delimited space that a person or group uses and defends as an exclusive preserve. It involves psychological identification with a place, symbolized by attitudes of possessiveness and arrangements of objects in the area"*. (Pastalan, 1970).

Common features of the proposed definitions include geographical area notions, a specific need fulfilled by the territory, proofs or tentative displays of ownership and protection of the specific territory (Altman, 1975; Baum and Epstein, 1978). In this sense, the most appropriate definition seems to be the one given by Edney (1974):

> *"Human territoriality can conveniently be characterized with a catchall description as a set of behaviors that a person (or persons) displays in relation to a physical environment that he terms 'his' and that he (or he with others) uses more or less exclusively over time."*

As shown in this definition, one can express his territoriality through various behaviors and a territory can take almost any shape or format. Some authors differentiate between primary (owned like home), secondary (restricted access such as private club) and public (almost anyone has free access) territories (Brower, 1965; Lyman and Scott, 1967; Goffman, 1971). In all cases, people may use markers to limit their territory. In the case of public places, very subtle means can be used such as clothes or glasses left on a table of a restaurant for example (Esser, 1972). As for personal space, the non-respect of one's territory by other individuals often leads to unpleasant consequences. Such consequences of the violation of a territory (Lyman and Scott, 1967) or the intrusion on a territory (Goffman, 1971) may range from very serious and offending to only annoying (Altman, 1975). The response to these encroachments may vary in the degree of aggressiveness and be either verbal or non-verbal. Being able to have and preserve his territory, even in a public setting, is an important component of social interaction. Several authors show that density levels may influence individuals' relationships with their territory (Baron et al, 1978; Baum and Valins, 1977). However, territoriality might be difficult to use in commercial setting as most of the studies deal with other social situations and territories that present closer relationships with the individual (house, jail...).

2.3.4 Freedom of Movement

An additional concept presented in the sociology literature may be important when considering crowd issues. It deals with the freedom of choice and its corollary the freedom of movement in a given space. This concept has often been presented, as a way to achieve privacy or at least to see if privacy is respected (Altman, 1975). It is described as part of personal control in its "freedom of choice" sense (Johnson, 1974). The behavior-selection control of Johnson (1974) describes an individual's ability to select a proper behavior to reach a desired outcome. In the "freedom of movement" sense, the ability of an individual to move freely in a setting or to get access to specific locations in order to reach his goal is close to this definition. This freedom of movement is essential in social interaction settings and seems to be a good reflection of density issues as suggested in more recent studies (Sinha and Nayyar, 2000; Wooldredge, 1997; Manning and Valliere, 2001; Klofas et *al*, 1992).

2.3.5 Conclusion and Measurement Issue

Altman (1975) suggests a relationship between these concepts (a means-end type of relationship with privacy as the ultimate goal) but other authors (Singer et *al*, 1998; Karlin et *al*, 1978; Rodin, 1986) simply propose that there is an interrelationship between these variables, sharing some common aspects that reflect the overall density concept. At this point, it is interesting to consider the fact that all four concepts previously described may reflect how dense (or not dense) a setting can be perceived to be. Indeed, one can consider, if taken in a neutral form (only to estimate their respective level), that any change in the human density level will have an impact on

each of the indicators representing the introduced dimensions. Indeed, they are all caused by the dense situation that arises. Moreover, one additional indicator may be added. This indicator is related to the physicalist approach of Stokols (1972) and the number of persons per area. This has been recognized in almost every study on crowding as the measurement of density. However, in our case, we add the perceptual component suggested by Rapoport (1976) and use the perceived number of people in the setting rather than an absolute number. Therefore, a high perceived privacy, a strong respect of one's territory and personal space, a respected freedom of movement within the setting as well as a low overall perceived estimation of the number of persons can all be considered as indicators of a low perceived human density setting. Following findings from sociological studies (Rapoport, 1976; Choi et *al*, 1976), this conceptualization offers a more detailed and thorough orientation to the central concept of perceived density, capturing more facets than the unidimensional measure that was previously used.

In order to cope with the confusing term "density" that is too often limited to the physical definition (Stokols, 1972), it is proposed to name the newly redefined construct *"perceived human concentration"*, allowing then to clearly differentiate it with the limited sense of physical density (cf figure 3). Moreover, physical density being a facet of the proposed construct, will offer a clearer distinction. Therefore, we can posit:

Hypothesis 1: In a service setting, perceived concentration is a multidimensional construct that is formed by 5 dimensions, namely: Privacy, Personal Space, Territoriality, Freedom of Movement and Physical Density.

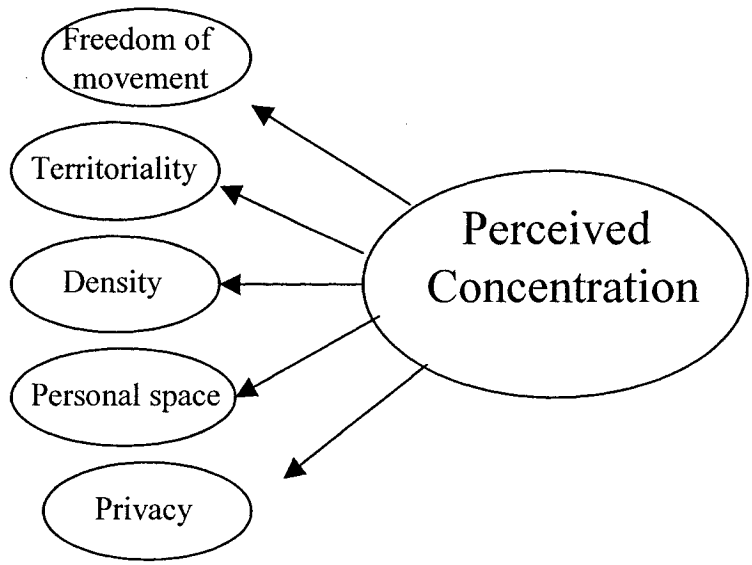


Figure 3. Proposed conceptualization of Perceived Human Concentration

3. *Human Concentration and Service Experience Satisfaction: What is the relationship ?*

3.1 A reference with limits: the classical model of retail crowding

As previously presented in chapter 2, many authors (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990) acknowledge the importance of focusing on the relationship between density, crowding and behavioral or affective consequences for the consumer. They set the stage for a debate around the way density bridges to crowding and how cognition, perception and affective issues are involved (Baum and

Epstein, 1978; Downs and Stea, 1979). According to their findings, it seems there is a consensus on the role of density as an antecedent of crowding (more exactly as an antecedent of the affective evaluation of a dense environment). Therefore, in their approach, the perception of high levels of density in a given situation should contribute to the feeling of being crowded and then to negative outcomes for the individual (figure 2). Crowding is depicted as a mediator between perceived levels of density and outcomes for the consumer (generally dissatisfaction). The empirical testing made by the authors focuses only on the crowding component of the model and, therefore, on the negative impact on satisfaction. The condition/situation variable role is eluded and its potential moderating or mediating role is barely mentioned in the initial study. Therefore, an interesting, but rather limited, density-crowding-outcome relationship is described.

3.2 Towards a redefinition of the human concentration-satisfaction relationship: Other considerations.

3.2.1. Direct and Indirect influence of human concentration on satisfaction

In the study of a crowd impact on the service experience using a business approach, the satisfaction with the experience represents the ultimate point of interest, the ultimate outcome in the research. In order to further develop Eroglu and Harrell's conceptual framework, it is interesting to consider their process and/or alternative paths that might lead to satisfaction/dissatisfaction. Choi et al (1976) suggest that two

types of responses can occur when an individual perceives a particular level of density.

First, they mention a cognitive stage in which the density level is perceived but in which there is no emotional or affective evaluation or content. In fact, this approach is very similar to the one presented by several authors, particularly in the marketing literature about physical settings and servicescapes and regarding cues that are evaluated by the consumer and use as heuristics in order to assess his satisfaction/dissatisfaction with the service experience (Bitner, 1992; Wakefield and Blodgett, 1994; 1996; Chang, 2000).

Second, they mention a more emotional, affective route to satisfaction in which the perceived density is evaluated in an affective manner and is either enjoyed (crowd enjoyment or functional density) or disliked (crowding feelings dysfunctional density). This evaluation then leads to the consumer's satisfaction/dissatisfaction. This is the conceptual approach chosen by Eroglu and Harrell in their conceptual model. However, it is never effectively tested and the attention is immediately shifted toward the negative evaluation (dysfunctional density or crowding) and its contribution to dissatisfaction.

An interesting analogy to this dual route to satisfaction is the hybrid nature of satisfaction often described in the literature. Indeed, satisfaction is often controversially presented either as a cognitive or affective evaluation. This can be related with the interplay of cognitions and emotions in satisfaction as suggested by several authors (Westbrook and Oliver, 1991, Oliver, 1993, 1997; Oliver, 2000; Chebat, 2002). In this approach, one of the main effects on satisfaction then stems

from the result of the confirmation/disconfirmation gap that is an end result of the difference between the perceived performances of the service in general, or of a specific attribute, and the expectations formed by the consumer prior to the encounter. A second impact on satisfaction is through affective reactions generated by the result of the confirmation/disconfirmation gap. Due to the potential application of satisfaction models to the crowd-processing model, previous findings from the satisfaction literature and more particularly expectancy-disconfirmation models will be discussed in order to improve the conceptualization of the retail-crowding model.

3.2.2 The role of Expectations: From an anonymous antecedent to a major component

The role of expectations as presented in the satisfaction process with a service or a product is a key concept in the literature (Fournier and Mick, 1999; Oliver, 1997, 1993; Zeithaml et al, 1993; Miller, 1977). Expectations are described as anticipations of future consequences (Taylor, 1994) or comparison standards (Oliver, 1989). They form the cornerstone of the satisfaction literature based on the Expectancy-Disconfirmation model (Oliver, 1981; Tse and Wilton, 1988). In this model, consumers form preconsumption expectations about a product (a service or even an attribute of a product or service) and its benefits and compare these expectations with the actual performance offered by the product or service. If the expectations are met, they are described as confirmed. If they are exceeded, there is a positive disconfirmation whereas if they are underachieved, there is a negative disconfirmation. This confirmation/disconfirmation variable becomes then the driver

of the satisfaction for the individual. The use of these comparative standards in the assessment of satisfaction is widely spread in the marketing literature (Fournier and Mick, 1999) and the pertinence of the expectancy-disconfirmation approach is supported by several studies (Yi, 1990; Tse et al, 1990; Erevelles and Leavitt, 1992; Oliver, 1981).

Several variations of the expectancy-disconfirmation model have been presented. In most of the cases, the debate revolves around potential direct effects of expectations and/or performance on satisfaction in addition to the indirect effect through disconfirmation (Oliver, 1997). According to contextual variables such as product categories, some studies support an expectation-disconfirmation impact on satisfaction (Bearden and Teel, 1983). Others demonstrate a performance-disconfirmation impact (Wilton and Tse, 1983) whereas a full model including all possible influences may also be applicable (Oliver and DeSarbo, 1988). As consumers seem to selectively use, fully or partially, the expectancy-disconfirmation model in their satisfaction process, it is strongly advised to explore the full model in studies regarding satisfaction. As suggested by Oliver (1998):

> *"It is the author's experience that any of these combinations* (meaning variations to the expectancy-disconfirmation model) *are possible and that none can be ruled out (or assumed) a priori."*

In their extended model of retail crowding, Eroglu and Harrell (1986) give a limited role to the expectations of the level of density formed by consumers prior to their encounter with the dense situation. They simply consider the anticipation of future high-density conditions as one of many cues or information about the setting that will affect consumers' interaction with the situation. These expectations are barely mentioned as antecedents that may reduce crowding feelings and/or moderate the dissatisfaction level that consumers may feel regarding the stress generated by the feeling of crowding but the authors make almost no mention of their role as a component of the crowd process model. They fail at capturing or considering the major role played by expectations as mentioned in sociology literature.

On the contrary, an interesting avenue opened by Rapoport (1976) in his research lies in the central role played by expectations or standards of comparison in the evaluation or even the assessment of dense conditions. Indeed, Rapoport (1976) as well as Altman (1975) present a very social-cognitive approach to the notion of density and its influence on the evaluation of a situation. Even if they do not agree on what variable to take into account (perceived density for Rapoport and privacy for Altman), they both acknowledge the importance of standards of comparison, estimated prior to the encounter, and of their impact on the way individuals deal with density evaluations. In their work, perceived density (concentration in our case) is never estimated in an absolute manner but rather assessed by comparison with a desired or expected level of density. The discrepancy (gap) between the perceived concentration and the expected one is then affectively evaluated by the individual (in a positive manner for crowd enjoyment or in a negative manner for crowding)

(Heimstra and McFarling, 1978). Since then, the central role of expectations in crowd assessment has been well documented in several sociology and psychology studies (Klein and Harris, 1979; Webb and Worchel, 1993; Ford, 2001; Martin, 1996) but only mentioned in the last study in marketing (Machleit et al, 2000). It is demonstrated in these studies that one's expectations about crowded or highly dense environments influence perceptions and outcomes for the individual of subsequent high-density situations. For instance, it is demonstrated that, in their primary setting (home), older people experience high density not as negatively as other members of the family because they expect such a level of interrelations (Sinha and Nayyar, 2000).

This position tends to support the importance of expectations in the consumers'evaluation of concentrated settings and calls for the application of an expectancy-disconfirmation approach, as previously described, for the conceptualization of human concentration model. With the inclusion of the affective route to satisfaction and the previously detailed explanations, we can then posit the following model (figure 4) and hypotheses:

Hypothesis 2a: In a service setting, the expected human concentration level to be encountered during the experience by a consumer has a negative influence on the disconfirmation level (discrepancy (gap) between perceived human concentration and expected human concentration).

Hypothesis 2b: In a service setting, the perceived human concentration level encountered during the experience by a consumer has a positive influence on the disconfirmation level (discrepancy (gap) between perceived human concentration and expected human concentration).

Hypothesis 3a: In a service setting, the discrepancy (gap) between perceived human concentration and expected human concentration (disconfirmation) has a significant and direct influence on the level of satisfaction of the customer with the service experience.

Hypothesis 3b: In a service setting, the expected human concentration level to be encountered during the experience by a consumer has a significant and direct influence on the level of satisfaction of the customer with the service experience.

Hypothesis 3c: In a service setting, the perceived human concentration level encountered during the experience by a consumer has a significant and direct influence on the level of satisfaction of the customer with the service experience.

Hypothesis 4a: In a service setting, the discrepancy (gap) between perceived human concentration and expected human concentration (disconfirmation) has a significant and direct influence on the affective evaluation of the level of human concentration encountered during the experience.

Hypothesis 4b: In a service setting, the expected human concentration level to be encountered during the experience by a consumer has a significant and direct influence on the affective evaluation of the level of human concentration encountered during the experience.

Hypothesis 4c: In a service setting, the perceived human concentration level encountered during the experience by a consumer has a significant and direct influence on the affective evaluation of the level of human concentration encountered during the experience.

Hypothesis 5: In a service setting, the affective evaluation of the level of human concentration encountered during the experience has a positive influence on the satisfaction with the experience.

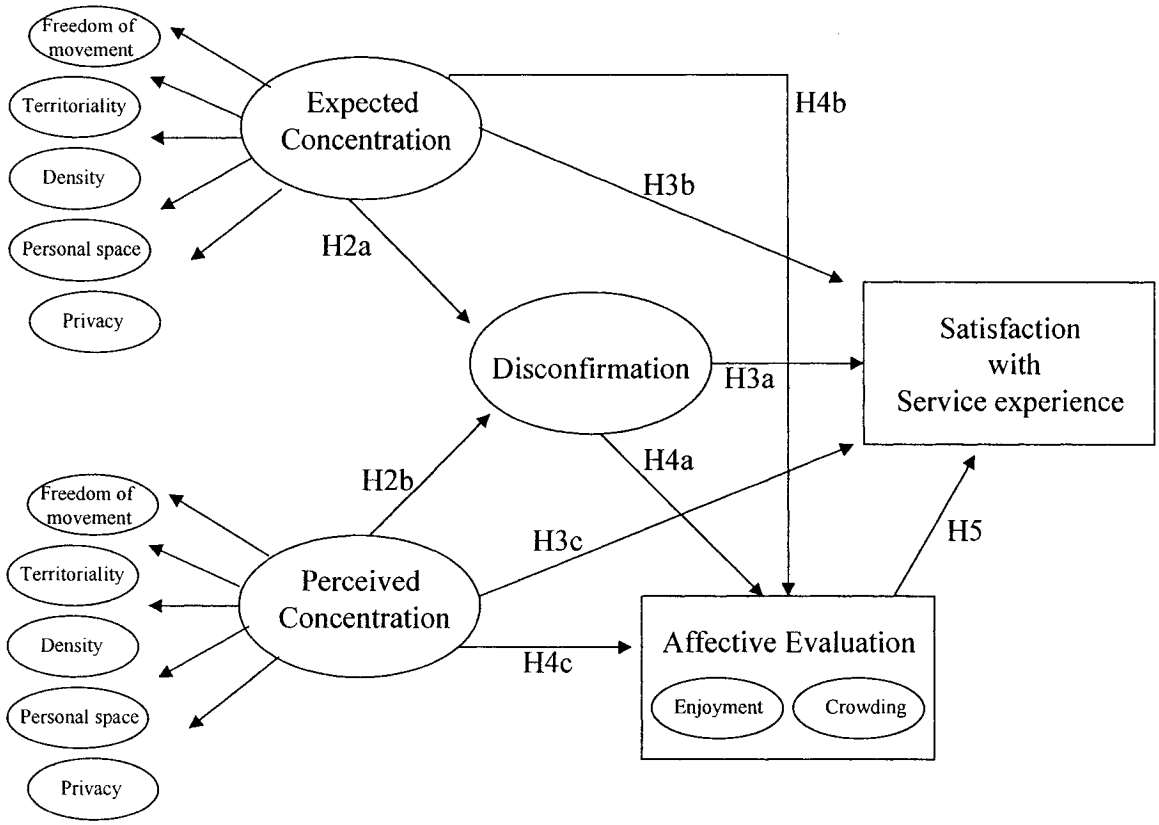


Figure 4. Impact of Human Concentration on Satisfaction with a service experience.

As presented in the literature review, the relationship between density (or concentration) and satisfaction is complex. Indeed, the impact of a crowd on individuals seems dependent upon the context in which the consumer has an encounter with this crowd (Altman, 1975; Baum and Epstein, 1978; Choi et al, 1976):

> *"Although perceived retail crowding can reduce shopping satisfaction, the relationship may not be a simple, direct one; there could be factors that moderate or mediate the relationship"* (Machleit et al, 1994).

In a retail setting (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990), the authors suggest that satisfaction with the shopping experience is negatively influenced by crowding. They also suggest that higher levels of perceived density should lead to more crowding (negative evaluation of a dense situation). These hypotheses seem logical but focus only on the negative impact of crowding. They simply consider the negative influence of perceived density on satisfaction/dissatisfaction through the affective moderating role of crowding. As expected and clearly mentioned in sociological literature, in such an approach, a negative affective evaluation of density levels (crowding) should lead in most cases to negative outcomes for the individual (Altman, 1975; Baum and Epstein, 1978; Rapoport, 1976). For instance, in a closed setting such as jail, highly dense environments often lead to a very negative affective evaluation of the conditions, a strong feeling of being crowded and a strong dissatisfaction with detention conditions when compared to prior opposed expectations made by inmates. These reactions may be followed by an increase in aggresivity, seclusion or rebellion through physical acts (Wooldredge, 1997; Klofas et al, 1992). This position depicts high human concentration as a driver of negative consequences (affective responses or satisfaction) for the individual during a service encounter.

On the other hand, the same authors (Eroglu and Machleit, 1986) also propose in their conceptualization that high densities may trigger positive affective evaluation on the consumers' part (even if they actually never test it). They call this positive evaluation "*functional density*" by opposition to crowding (*"dysfunctional density"*). On a similar standpoint, in an experiential study on baseball, Holt (1995) shows that individuals who perceive lower density of patrons than expected during a big game report some dissatisfaction with their experience whereas crowded bleachers contribute to enhance satisfaction with their baseball experience. Compared to most of social studies, this finding may appear counterintuitive but support the idea that high human concentration may be a driver of positive consequences (affective responses or satisfaction) for the individual during a service encounter.

This contextual valence of the relationship between human concentration and satisfaction limits the nature of the previous hypotheses. Indeed, in hypotheses 3 and 4, there is no valence posited in the proposed relationships. Instead, for sake of clarity, the existence of significant relationships is only hypothesized. More formal hypotheses including the signs of the relationships depending on the nature of the contextual variable considered are presented in the next section. At this stage, hypotheses 2 to 6 only aim at demonstrating the existence of an established process linking human concentration and satisfaction.

3.3 Moderators of the human concentration-satisfaction model

> *"An analysis of crowding must account for the fact that crowding perceptions are context dependent. On many occasions, people seek out highly dense environments such as athletic events and bars...As Desor (1972) suggests, the normative levels of spatial and social density for a cocktail party are different from those for an airport lounge."* (Eroglu and Harrell, 1986).

Although the vocabulary used by the authors is not identical to the definitions adopted in this thesis, it appears that context dependency is central to the study of the crowd impact.

In the retailing literature, high levels of density are described in most of the cases as dysfunctional (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990). Building their rationale on overload information theory, the authors hypothesize and find support to the fact that the higher the level of perceived retail density, the higher the retail crowding (negative affective evaluation or stress associated to the situation). They also show that this negative feeling as well as dissatisfaction may be reduced by different variables (Machleit et al, 2000).

In sociological and social psychological literatures, Stokols (1972) and Altman (1975) suggest that high density is a necessary yet insufficient condition for crowding and dissatisfaction. Therefore, high-density (concentrated) situations may not automatically lead to crowding and dissatisfaction. Indeed, for high density to

produce crowding effects, several personal, social or situational variables have to be involved (Rustemli, 1993). Moreover, the interaction of these variables and density (concentration) may alter (moderate) the process through which the situation is evaluated and/or even change the feelings of crowding or satisfaction levels reported by an individual (Sinha and Nayyar, 2000; Eroglu and Machleit, 1990). Most of the research on crowding has been devoted to the identification and the study of these variables (Baum and Epstein, 1978) and some of them are presented hereafter.

The identification of variables that may have an influence on the way the crowd impact is processed by consumers is an essential step in the delivery of a detailed picture of this problem. However, it would be impossible to give an exhaustive list of these variables, yet using related findings, the key variables in personal, interpersonal and situational categories are presented and hypotheses are made.

3.3.1. Situational Variables

3.3.1.1 Hedonic versus Utilitarian shopping situations

The service context in which the dense situation occurs is an essential influencer of the way individuals react to these conditions. A considerable amount of research in marketing has been devoted to the way an experience is built by a consumer and how others in the services factory, crowd in particular, can enhance/destroy and contribute to the experience of the individual (Eroglu and Machleit, 1990; Machleit et al, 2000; Price and Arnould, 1993; Holt, 1995; Wann et al, 2000; Eastman and Land, 1997; Sherry, 1998).

In most of the studies using a retail setting such as a shopping mall or store, the high human concentration triggers a classical negative influence on affect related to the shopping environment (crowded feelings) as well as on satisfaction (Hui and Bateson, 1991; Eroglu and Machleit; 1990). Their results are in line with qualitative studies that suggest that highly dense situations in a service setting often lead to dissatisfaction and stressful situations (Grove and Fisk, 1997). However, the same studies suggest that the nature of the shopping trip or even the setting itself may moderate this negative influence on shopping feelings and satisfaction. For instance, for specific levels of density (concentration), the separation of task versus non-task shopping motives reveals that the non-task oriented shoppers are less stressed (crowded) and dissatisfied than task-oriented shoppers (Eroglu and Machleit, 1990). Moreover, Hui and Bateson (1991) use two types of service settings in their research (bar and bank) and find differences in the consumers' perceived crowding levels as well as in the way satisfaction is influenced by density. They even suggest in their conclusion that *"density produces positive emotional and behavioral effects in some settings and negative effects in other settings (Freedman, 1975)"*.

In other studies in the experiential or hedonic literature (Price et al, 1993; Holt, 1995; Wann et al, 1999; Eastman and Land, 1997; Sherry, 1998), through an increase in the number of social interactions and the creation of a particular atmosphere, specific dense environments such as a baseball stadium or bars are associated with satisfaction and positive feelings about the perceived high concentration. These are particular cases that show how dense environments can positively impact a consumer's experience. It may be linked to shopping characteristics with the leisure

or hedonistic nature of these environments and the role of the crowd in building a pleasant experience.

These findings open the door to the potential moderating role that the type of service (leisure or utilitarian) may have in the human concentration-satisfaction model. It is important to notice that all leisure services describing an enhancement of the experience due to the dense conditions are services where the crowd is an inherent part of the experience (a concert, a ball game, a show...). Individuals expect the crowd to be there as much as they expect a great performance of the sports team or the artist. The contextual variable (leisure versus utilitarian) has yet to be tested in a new framework that would allow positive consequences to erupt as results of dense environments. Our model aims at verifying the moderating role of this variable and its influence to turn a usually negative situation (high concentration) into a positive experience in terms of affective evaluation and satisfaction. Therefore, we hypothesize:

Hypothesis 6: The relationship between human concentration and service satisfaction vary with the shopping situation (leisure versus utilitarian).

Hypothesis 6a: In a leisure service situation, there is a positive relationship between human concentration and the affective evaluation of the situation whereas in a utilitarian service situation there is a negative relationship.

Hypothesis 6b: In a leisure service situation, there is a positive relationship between human concentration and satisfaction with the experience whereas in a utilitarian situation there is a negative relationship.

3.3.1.2 Confirmation and Disconfirmation

As underlined previously, expectations regarding the human concentration level of a given situation play a major role in the way a consumers assess their satisfaction with the service experience (Webb and Worchel, 1993; Ford, 2001; Martin, 1996).

In the retailing literature, as early as 1986, Eroglu and Harrell mention the role of expectations in the process. However, they do not posit formal hypotheses in their empirical application of this work. Only in the latest study (Machleit et al, 2000), do they use the satisfaction literature and the expectancy-disconfirmation model to hypothesize that in a store *"shopper satisfaction would be higher when perceived crowding falls short of or meets crowding expectations, and lower when perceived crowding exceeds expectations"*. They find inconclusive results in the real life settings experiment and use an experimental design that does not allow them to test for this hypothesis in the laboratory study. They leave the door open for future research about the important role of expectations and their confirmation/disconfirmation impact on the human concentration-satisfaction model.

In the satisfaction literature about the expectancy-disconfirmation model, a distinction is made between confirmation, negative and positive disconfirmation (Oliver, 1997; 1981). When a service or a product performs as expected, one would say that there is a zero disconfirmation or a confirmation. Disconfirmation is a little

more complicated and the valence has to be used to qualify the type of disconfirmation that is considered. In the case of a negative disconfirmation, the performance is below the standard of reference whereas in a positive disconfirmation the performance is above the standard. In a situation of confirmation of expectations, an assimilation position is taken and the expectations become the basis for the evaluation and satisfaction determination. On the contrary, when the performance is disconfirmed, a contrast position is adopted and the disconfirmation or performance itself mainly contributes to satisfaction. In fact, in the disconfirmation situation (positive or negative) differences are accentuated whereas in a confirmation situation they are drawn to the original expectations (Olson and Dover, 1979; Anderson, 1973; Oliver, 1997; 1998). The valence of the disconfirmation is essential in order to apprehend a potential impact on any process or variable considered. Therefore, it is important to differentiate between the types of disconfirmation (positive or negative).

Usually in the expectancy-disconfirmation approach, positively valenced products or benefits are considered and a positive disconfirmation therefore leads to satisfaction whereas a negative disconfirmation leads to dissatisfaction. However, in a recent study, the authors observe a reversed version of the traditional expectancy-disconfirmation model. Indeed, the negative disconfirmation of disbenefits may also lead to satisfaction (Fournier and Mick, 1999). This finding suggests the importance of understanding if the attribute considered is a benefit or a disbenefit in order to understand how disconfirmation may work. For instance, in the case of human concentration and as suggested in hypothesis 7, a high human concentration may be considered as a benefit (or a positive attribute) in the case of a leisure situation

whereas it would be considered as a disbenefit (or a negative attribute) in the case of a utilitarian situation. Therefore, in order to apprehend the effect or the confirmation/disconfirmation situation, it is important to include the interaction effect with the situation considered and to consider confirmation/disconfirmation impact on crowd processing within a specific situation. Moreover, no main effect of expectations is hypothesized as the disbenefit status of the crowd may vary with the situation at stake and therefore effects without consideration of the situation may cancel each other. In the light of this discussion, it is hypothesized that:

Hypothesis 7: The relationship between human concentration and service satisfaction vary with the level of disconfirmation of human concentration.

Hypothesis 7a: In the case of a leisure service situation with a positive disconfirmation of human concentration, there is a significantly more positive relationship between human concentration and the affective evaluation of the situation than in the case of a leisure service situation with a confirmation of human concentration.

Hypothesis 7b: In the case of a leisure service situation with a negative disconfirmation of human concentration, there is a significantly less positive relationship between human concentration and the affective evaluation of the situation than in the case of a leisure service situation with a confirmation of human concentration.

Hypothesis 7c: In the case of a utilitarian service situation with a positive disconfirmation of human concentration, there is a significantly more negative relationship between human concentration and the affective evaluation of the situation than in the case of a utilitarian service situation with a confirmation of human concentration.

Hypothesis 7d: In the case of a utilitarian service situation with a negative disconfirmation of human concentration, there is a significantly less negative relationship between human concentration and the affective evaluation of the situation than in the case of a utilitarian service situation with a confirmation of human concentration.

Hypothesis 7e: In the case of a leisure service situation with a positive disconfirmation of human concentration, there is a significantly more positive relationship between human concentration and the satisfaction than in the case of a leisure service situation with a confirmation of human concentration.

Hypothesis 7f: In the case of a leisure service situation with a negative disconfirmation of human concentration, there is a significantly less positive relationship between human concentration and the satisfaction than in the case of a leisure service situation with a confirmation of human concentration.

Hypothesis 7g: In the case of a utilitarian with a positive disconfirmation of human concentration, there is a significantly more negative relationship between human concentration and the satisfaction than in the case of a utilitarian service situation with a confirmation of human concentration.

Hypothesis 7h: In the case of a utilitarian with a negative disconfirmation of human concentration, there is a significantly less negative relationship between human concentration and the satisfaction than in the case of a utilitarian service situation with a confirmation of human concentration.

Hypothesis 7i: In a leisure service situation with positive disconfirmation of human concentration, affective evaluation and satisfaction regarding the experience reach higher levels than in a leisure service situation with confirmation, which in turn will reach higher levels than in a leisure service situation with negative disconfirmation.

Hypothesis 7j: In a utilitarian service situation with negative disconfirmation, affective evaluation and satisfaction regarding the experience reach higher levels than in a utilitarian service situation with confirmation, which in turn will reach higher levels than in a utilitarian service situation with positive disconfirmation.

Hypothesis 7k: In a leisure service situation with positive disconfirmation or confirmation of a high human concentration (many customers in the situation for the 2 cases), affective evaluation and satisfaction regarding the experience reach higher levels than in a utilitarian service situation with positive disconfirmation or confirmation of a high human concentration (many customers in the situation for the 2 cases).

Hypothesis 7l: In a leisure service situation with negative disconfirmation or confirmation of a low human concentration (only few customers in the situation for the 2 cases), affective evaluation and satisfaction regarding the experience reach lower levels than in a utilitarian service situation with negative disconfirmation or confirmation of a low human concentration (only few customers in the situation for the cases).

3.3.1.3 Scarcity of Services

Services have often been described (and distinguished from goods) in terms of their inseparability, heterogeneity, intangibility and perishability (Iacobucci, 1998; Band, 1986, Edgett and Parkinson, 1993). Regarding perishability, services are simultaneously produced and consumed, and therefore cannot be stored until a point in time of greater demand. This approach is true for any kind of service (restaurant, banking services, health services). Each service experience is unique, heterogeneous from another (Arnold, 1995; Bitner et al, 1996) and when the consumption act is postponed, the consumer has no warranty that his next experience with the service

will match his initial expectations. In addition to the heterogeneity of the service experience, a notion of rareness, scarcity of the service experience exists. Indeed, some services are only offered on a very limited basis (concerts, events....), creating potential restrictions on accessibility to the service and demand that exceeds the offer. This aspect has been neglected in the study of services consumption and refers to the scarcity of services.

The concept of scarcity finds its roots in economics. In fact, *"the concept of scarcity is the cornerstone of economics as a discipline"* (Raiklin and Uyar, 1996). In the economic sense, scarcity is viewed as the disparity between our wants and our capacities in terms of production (Leiss, 1976). The link with economics may appear far from the service literature and the experiential nature of the situations considered in this research. However, economists have attempted to reconcile their production approach with the experiential marketing literature. For instance, Lebergott (1993) begins his retrospective look at *"Pursuing Happiness: American Consumers in the Twentieth Century"* with a reminder that *"economic activity aims not for output but for experience via consumption"*. Moreover, Pine and Gilmore (1999) present this evolution of economic paradigms to fit the new service reality. They introduce the economic meaning and offering of experiences, provide characteristics of an experience in the economic sense and discuss how and when a company should enter what they call the experience economy. They also notice that the growth of this type of economy is linked to the fact that offerings provide attractive alternative ways to spend the increasingly scarce consumers' time in leisure consumption (Veblen, 1967;

Linder, 1970; Holbrook, 2000) but they do not mention any potential influence of scarcity of offering.

In the marketing literature regarding experiential products, consumers are depicted as facing an increasing level of choice in terms of entertainment events. However, they often adopt unrational behaviors and seem ready to compromise on several key features for decision such as price, waiting cost or comfort in order to have access to **special or exclusive events** (Eastman and Land, 1997; McAllister, 1998). Empirical examples of these behaviors that value scarce events are found across several types of experience such as sporting or cultural events and include people paying up to 6 times the price of a ticket, spending the night in front of the sales counter or attending the event without a full view of the scene (McAllister, 1998, Madrigal, 2000). Recent results suggest that individuals may have preferences for scarce possessions in general (Snyder 1992; Tepper Tian et al, 2001) but this preference seems more obvious in the case of visible or experiential products such as events (Eastman and Land, 1997; McAllister, 1998). Consumers seem to comply with an elitist rule and acknowledge the scarcity of specific events. They appreciate the value that can be gained through playing the scarcity game (Fiske, 1992; Eastman and Land, 1997) and this concern seems more pronounced for leisure and social events. Therefore, we can posit:

Hypothesis 8: In a leisure service setting, consumers'satisfaction is higher in scarce situations than it is in non-scarce situations.

The value gained through the consumption of a scarce service may be derived from status gaining (compared to others) but also through a true appreciation of a unique performance (connoisseur) (Bhattacharya, 1998). In the case of status, the social component of the service is at stake. Indeed, services for which the experience is based on social interactions rather than pure service performances such as shared leisure time, may be easier to use as a status affirmation and be preferred by consumers. The impact of others (crowd) in a scarce setting may have different implications. In fact, as suggested in the literature, a scarce event means that a limited number of individuals have access to the service experience. Therefore, low concentration levels should trigger more satisfaction in a scarce setting (Snyder 1992). However, in the case of a leisure situation where the crowd plays a role in the quality of the experience, a minimum level of concentration should be required to trigger satisfaction and build up the experience (Eastman and Land, 1997).

Hypothesis 9: In a scarce service situation with many consumers (positive disconfirmation or confirmation of a high human concentration), satisfaction regarding the experience reaches higher levels than in a scarce service situation with only few customers (negative disconfirmation or confirmation of a low human concentration).

Therefore, in the same line of reasoning, knowing that a leisure event is scarce, being involved in it and having a high concentration of people present should have the strongest contribution to the satisfaction compared to any other situation and

specifically compared to a utilitarian event, non-scarce, and low concentration event, which should be the least satisfying situation. Consequently, we can hypothesize:

Hypothesis 10: In a leisure and scarce service situation with positive disconfirmation consumers are more satisfied than in a utilitarian and non-scarce service situation with a negative disconfirmation.

3.3.2 Personal Variables

3.3.2.1 Personality Traits

Differences in personality have been investigated in order to understand their potential influence on personal space levels and perceived crowding (Altman, 1975; Patterson et al, 1971, Cook, 1970). There is an empirical support to the fact that people with outgoing personalities or high-social contact tempers are more tolerant to smaller interpersonal distances and to more frequent contacts than their introverted counterparts (Williams, 1971; Cook, 1970). Several authors notice that these variables, even if pertinent, should not monopolize the focus and distract researchers from more key variables such as situational ones (Altman, 1975; Heimstra and McFarling, 1978). Nonetheless, Machleit et al (2000) report that individuals vary in terms of their tolerance for crowding and that this individual trait may be a potential moderator to the crowding-satisfaction relationship (Dooley, 1974). Therefore, they develop their own measure of tolerance for crowding (personality trait) and find support to the moderating role of their tolerance for crowding variable. There exists several other measures used in the consumer research literature that may have the

same effect on the concentration-satisfaction relationship. Indeed, two important individual traits in the consumer behaviour literature related to social interaction might be considered as potential influencers of the crowd impact process.

Based on Riesman (1950), Kassarjian developed a measure to assess the level of directedness of individuals (inner versus other) on a continuum. The I-O preference scale (Inner-Other Directedness, (Kassarjian, 1962)) attempts to capture the extent of people's reliance on others for guidelines or focus on their own values to find their way in society. Inner individuals are driven by their personal need of accomplishment whereas other-directed individuals are motivated by the need for approval of others and therefore look for social interaction opportunities. Individuals who are more oriented towards others usually enjoy higher density (more interactions or advice) or, at least, do not perceive as many people in a given setting. Another individual trait to consider is the interpersonal orientation displayed by a consumer.

Indeed, two of the three dimensions of the CAD scale (Cohen, 1967) are also of particular interest. The compliance dimension represents the *"desire to be a part of the activities of others"* and the detachment one is *"the desire to put emotional distance between oneself and others"*.

All other factors being held constant, the orientation towards others (as measured by these two traits) may have an influence on the satisfaction level of the consumers. It may moderate the relationship between concentration and satisfaction. It is in fact expected that individuals with a strong orientation toward others would like higher concentration levels (more interactions or advice). Therefore we can hypothesize:

Hypothesis 11: The relationship between human concentration and service satisfaction will vary with the level of orientation towards others (I-O).

Hypothesis 11a: In any service situation, there is a significantly less negative relationship between human concentration and the affective evaluation of the situation for individuals who are more oriented towards others (I-O) than for those who are not.

Hypothesis 11b: In any service situation, there is a significantly less positive relationship between human concentration and the satisfaction for individuals who are more oriented towards others (I-O) than for those who are not.

3.3.2.2 Prior Experience

Prior experience with a particular setting is often presented as an important variable in the way individuals evaluate a specific situation (Webb and Worchel, 1993; Martin, 1985; Evans and Lepore, 1993). Due to the psychological nature of the concepts presented in the proposed model, it would be an oversimplification to define the crowd experience as an "acontextual" process and only focus on a single situation (Webb and Worchel, 1993). In particular, it would be more rigorous to consider that an individual's prior experience with a dense situation is likely to influence perceptions and interpretations of a subsequent dense situation. Social-judgment theory can be used to explain the influence of prior experiences on dense situation.

Following the social judgment theory, individuals categorize a new stimulus in reference to prior experiences (Helson, 1964; Martin, 1985).

In this line of research, several studies show that perceptions and expectations regarding a given situation are *"jointly determined by the characteristics of the stimulus and cognitions held by the individual as a result of prior experiences "* (Webb and Worchel, 1993). In addition, Manis and Paskewitz (1984) suggest that prior experience gives a standard of comparison for individuals as well as drives their expectations about a dense situation. Indeed, people with experience of a crowd context have a tendency to alter their expectations or perceptions following an assimilation-contrast pattern. The standard offered by prior experience influences the outcome of a direct comparison (the gap influence on satisfaction in our case). Prior experience also indirectly influences affective evaluation through the impact on expectations (Manis et al, 1991). Consequently, we hypothesize:

> **Hypothesis 12:** Individuals' experience with any given service situation influences their perception (a) and expectations (b) regarding levels of human concentration that they encounter in the setting.

The general final model to be tested is presented hereafter in figure 5.

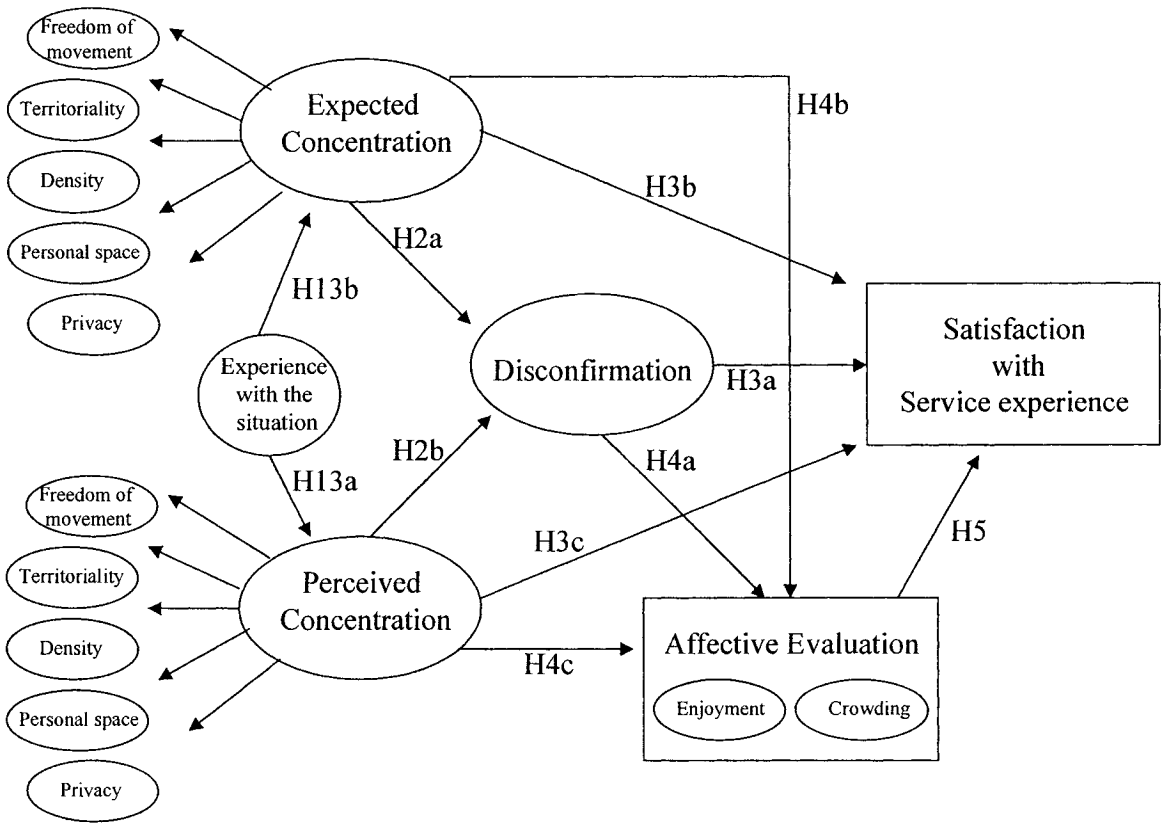


Figure 5. Impact of Human Concentration on Satisfaction with a service experience: Final Model

3.3.3 Other Variables

3.3.3.1 Socio-demographics

Variables such as gender differences or age are often cited in the crowd literature as potential influencers of perceived density or crowding (Altman, 1975; Patterson et al, 1971; Argyle and Dean, 1965; Tennis and Dobbs, 1974; Sinha and Nayyar, 2000). It seems that age is an ambiguous variable. In certain cases, age is correlated with experience and its effect is confounded with the prior's experience one. Older people have more experience of situations, know what to expect and therefore may present lower perception of human concentration than younger adults (Sinha and Nayyar, 2000). On the other hand, some studies report that the reduction or loss of physical health may lead to discomfort in dense situations and therefore perceptions of human concentration by elderly may be higher than their younger counterparts (Pastalan and Pawlson, 1985). Some gender studies also suggest that men have larger personal space zones than women and that females are more tolerant of contact with others (Patterson et al, 1971; Duke and Nowicki, 1972). In both cases, very contrasting results are found in the literature and several researchers call for a program of research that would be devoted to these issues as central factors (Altman, 1975). Due to these suggestions, no formal hypothesis regarding these variables is made in the thesis. However, due to the potential role they might play in the crowd impact model that is tested here, their effect is considered. An interesting suggestion given in the gender studies on crowding deals with the fact that along with men-women interactions, other interpersonal dyads should be considered, suggesting that the nature or composition of the crowd is as important as the size. The next variable

studied here represents the effects of specific aspects of the crowd in terms of the composition of the group and its effect on the individual entering the setting.

3.3.3.2 Interpersonal Variables

So far in our study, crowd has been considered as a group of individuals with a common spirit, common features that turn this crowd into an entity almost deprived from individualistic differences or particularity. A crowd is more than that. Indeed, individuals share a common reason for getting together and contribute to the group's particular identity. A crowd cannot be evaluated or processed only in terms of the perceived human concentration and whether we like it or not. For instance, a crowd of 200 college students attending a hockey game has different features than a crowd of 200 professors attending a seminar on direct marketing. As individuals, according to our own characteristics, we feel more used to, and that we fit better in, one of the previous settings than the other. We perceive less people when we have to interact with our preferred reference group instead of the least similar group. Several studies deal with these similarities or closeness between an individual and the group (crowd) he is supposed to interact with (Little, 1965; Altman, 1975; Reicher, 1996). An explanation of the previously described behaviors can be found in the social identity model of the crowd (Stott and Drury, 2000; Reicher, 1984). Following this model, "*members of crowd act in terms of shared social identity. The defining dimensions of this identity determine both the normative limits of action (what people do) and the extent of participation (who joins in).* " (Stott and Drury, 2000). This model is based on self-categorization theory (Turner et al, 1987) in which collective behavior and

social influence are only possible on the basis of shared self-categorization (Stott and Drury, 2000). People tend to self categorize with groups formed by similar individuals. Therefore, individuals encountering a crowd that they perceive as similar to them are likely to estimate a reduced number of people around them or, at least, not to feel crowded (to have negative evaluation of the concentration condition). The similarity can take different forms and it needs to be more clearly defined. In services marketing literature, examples of similarity among co-consumers have been found with age and cultural origin. Despite some exceptions in specific contexts, many cases show that people seem to have a preference for co-consumers that they judge as similar to themselves (Grove and Fisk, 1997; Price et al, 1995). Using the self-categorization theory and other findings reported in this section, it is reasonable to think that the similarity between a group and an individual who has to interact with this group has an impact on the way this person lives his experience.

3.3.3.3 Culture

Extensive research has been conducted on the impact of cultural differences related to privacy issues (Mexican context with Lewis, 1961; English homes with Kuper, 1953; Samoan with Westin, 1970; Elderly in India Sinha and Nayyar, 2000) and personal space (Arabics with Hall, 1966 and Watson and Graves, 1966; Latin-American with Hall, 1966 and Baxter, 1970). In both cases, there are differences in spatial distancing in different cultures and therefore impacts in the use of space and the social-interaction style are noticeable (Heimstra and McFarling, 1978). Similarities have been found between Arabic, Mediterranean and Latin American

societies in terms of exhibiting smaller distancing and higher levels of contact than Northern European and Caucasian North American groups (Altman and Vinsel, 1977; Baxter, 1970). Being defined as dimensions of perceived human concentration (privacy and personal space), it is reasonable to expect that cultural differences also affect the relationship between human concentration and satisfaction. For instance, in Latin American groups, the measure of perceived concentration should be lower, in absolute value, than the one obtained for Caucasian North American individuals (Evans et al, 2000). The affective evaluation of the situation would be different according to the cultural group. All other factors being held constant, culture may then moderate the relationship between human concentration and the service satisfaction.

3.3.3.4 Conclusion

Due to the high numbers of contextual variables that we have to study in this research, no formal hypothesis is made concerning the interpersonal, socio-demographic or cultural variables presented above. I acknowledge the fact that these variables can have an influential role in the way crowd impacts a service experience but instead of manipulating different levels for each of these variables, we will control for each of them in our experiment to ensure that the sample is homogeneous in so far as these variables are concerned. Manipulation checks will be further performed.

The personal, situational and interpersonal variables presented above do not represent a comprehensive set of all the variables that may impact the way human concentration and satisfaction with the service experience are related. However, they

clarify the picture that researchers should have on the nature of the influencing variables and the way they interact with the general process. They give a potential explanation for a positive effect of crowd in a service experience. Similar to interpersonal variables in this study, other variables such as the duration of the encounter or attribution of the situation can also influence the process. We will control rather than test these variables to make sure that the data collection is makeable in a realistic manner (limitation of the number of cells to be tested).

CHAPTER IV

HUMAN CONCENTRATION SCALE DEVELOPMENT: AN EMPIRICAL STUDY

1. *Overview*

This Study is designed to evaluate the psychometric properties, the multidimensionality and the pertinence of the proposed scale of perceived human concentration. The development of the human concentration scale proposed in the hypothesis 1 is conducted in line with the scale development paradigm proposed by Churchill (1979) and the similar guidelines offered by DeVellis' process (1991). This multi-stage process is presented in figure 6. For each step of the process, the methodology is described and results are given. Discussion and Conclusions are presented at the end of the chapter.

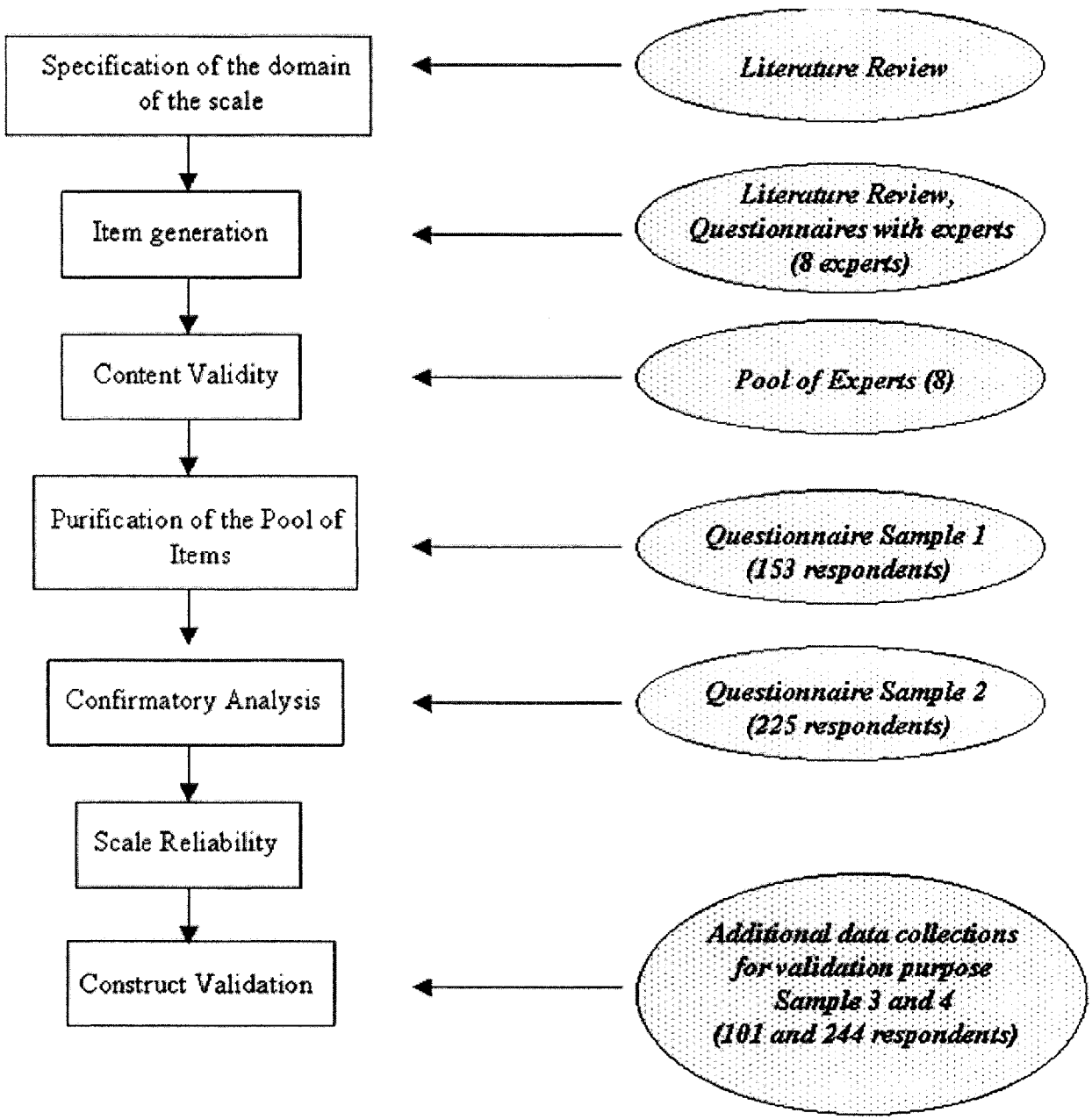


Figure 6. Scale Development Procedure

2. *Distinction between Formative (Index) and Reflective (Scale) Indicators*

The goal of the measurement study in this thesis is to develop a measure that is a proxy for human concentration. This measure is designed to represent the theoretical construct in a larger model that will describe the potential impacts of concentrated situations on consumers' reactions. As Nunnally (1967) or Churchill (1979) presented in their work, the domain sampling method is used in order to create a subset of items from the original domain definition that gives an accurate estimate of human concentration (Reinecke Flynn and Pearcy, 2001). In this approach, *"the measure contain the barest minimum of extraneous variance while at the same time accurately representing the construct"* whereas, in the case of a diagnostic scale, the researcher would need to see that he gives the most complete picture of the studied domain (Reinecke Flynn and Pearcy, 2001). In the same line of reasoning, recent studies question the scale development process and suggest that index construction may be an alternative to the traditional scale development presented in the literature (Diamantopoulos and Winklhofer, 2001; Bollen and Lennox, 1991).

The main difference between the two approaches is based on the fact that *"formative indicators (index) could be viewed as causing rather than being caused by the latent variable (scale) measured by the indicators"* (MacCallum and Browne, 1993). Therefore, the choice of the causal priority dictates the type of measurement that should be adopted (Bollen, 1989). In our case, it is important to determine conceptually if human concentration causes the first-order factors (Privacy, territoriality, freedom of movement, personal space and density), which in turn cause individual items (indicators) or if the logic is reversed. In light of previous findings

described in the literature review about density and the other factors introduced as well as the measurement developed by others such as Eroglu and Machleit (1994), it seems more appropriate to consider our measurement process as a scale development rather than an index construction (Diamantopoulos and Winklhofer, 2001). Moreover, formative indicators must have specific properties that clearly separate them from reflective indicators and reinforces the classification of our measurement process as a scale development (Fornell and Cha, 1994; Diamantopoulos and Winklhofer, 2001). The most important distinction lies in the fact that reflective indicators are interchangeable and that the omission or removal of one item (or facet) should not change the deep nature of the construct whereas for formative indicators the same omission would alter completely the measured concept. Moreover, if a domain sampling method is adequate for reflective indicators, a census of indicators is necessary for an index construction (Bollen and Lennox, 1991; Diamantopoulos and Winklhofer, 2001). In our case, our first-order factors or indicators are all manifestations of human concentration and the removal of one of them may reduce the number of consequences of concentrated settings for the individual but they would not change the real nature of the concentration. Also, in the case of formative indicators, no special patterns of correlation should be expected between indicators whereas in our case we expect to have significant and predictible relations between indicators.

All these remarks reinforce the positioning of our measurement development process as a scale development and support the decision of applying the guidelines

for scale development proposed by previous authors (Churchill, 1979; DeVellis, 1991; Spector, 1992) and presented in figure 6.

3. *Scale Development*

3.1. Specification of the domain of the scale

The specification of the domain of the scale ("perceived human concentration") is presented in the literature review (Chapter 3). Moreover, being considered as a multidimensional construct, each dimension is presented and defined. At this step, based on theory, evidence of what has to be measured is given. As a short summary, it is possible to say that human concentration is defined as an individual's perception of the number of person in a given situation. Following this overall definition and according to his human concentration perception, an individual perceives himself as having more or less personal space, more or less freedom of movement, more or less territory, more or less privacy and more or less individuals around him. Based on the density and crowding literature, perceived human concentration is conceptualized as subsuming five perceptions manifestations.

3.2. Item generation

Multi-items measures are strongly recommended by Churchill (1979) for their improved reliability and finer distinctions in particular. Accordingly, multiple items were created for our scale development. To generate an adequate bank of items that reflects the five facets of human concentration previously presented, an extensive literature review (chapter 3) and semi-formal interviews with consumers were

conducted. Subsequently, items from previous existing scales and literature review (Eroglu and Machleit, 1994; Stokols, 1972; Proshansky et al, 1976; Baum and Epstein, 1978) were modified and complemented by other items drawn from qualitative data collected with consumers (Richins and Dawson, 1992; Bearden et al, 2001). A first simplistic sample of items was then developed (6 to 10 items for each dimensions).

In the mean time, a pool of 16 experts (PhD students, professors) in the area of services marketing, consumer behavior, sociology and psychology were identified. Half of these experts (8) were used to generate additional items through their answers to a questionnaire that was distributed to them. This survey includes a cover letter and definitions of each of the dimensions identified in the literature. The format of the scale, as well as some examples of the items already developed, were also offered. This questionnaire is presented in the appendix 1. They were asked to use their expertise to provide additional items for each dimension. The resulting items constituted an original pool of 87 items (10 to 26 items for each of the five dimensions) that intended to measure the perceived human concentration. Throughout the process, care was taken to eliminate lengthy, double-barreled, ambiguous statements (Cadogan et al, 1999; Bearden et al, 2001; DeVellis, 1991) and both positively and negatively worded items were included in the item pool (Spector, 1992).

3.3. Content Validity

The other half of the pool of experts (8) was then used to evaluate the pool of items. Indeed, they reviewed the list of items that had been developed and judged how relevant they thought each of them was with what it was intended to measure. This procedure acts as a content validity check for the scale to be developed (Bearden et al, 1989; Bearden et al, 2001). They also evaluated the items' clarity and conciseness. Each expert received the pool of items with a cover letter and directions about what each item was supposed to measure and each dimension's definition. This was similar to the questionnaire distributed for item generation (Appendix 1) with the addition of the pool of 87 items. They were asked to rate each item on the basis of their representativeness of the dimension they were supposed to measure. The decision, whether or not to keep an item in the scale, was made if at least 6 experts (of 8) judged that an item was relevant and usable in our measurement tool. This process reduced the number of items to 63. The number of remaining items per dimension ranged from 24 for privacy to 9 for territoriality.

3.4. Administration of the pool of items to a development sample

3.4.1 Questionnaire

Following the content validity analysis (expert review), the remaining 63 items were integrated to a questionnaire for administration to a development sample. Each item was formatted into a seven-point (totally agree to totally disagree) Likert-type

response scale. Items from the five dimensions were randomly introduced in the following questionnaire.

The purpose of this step is to purify the measurement tool based on its psychometric properties. It is used to assess the properties of the items and only the most adequate ones will remain in the scale for the next step (Churchill, 1979; Reinecke Flynn and Pearcy, 2001).

In addition to the initial pool of data, pretest questions were introduced. More precisely, different settings (bar, bookstore, restaurant) were evaluated regarding their hedonic or utilitarian content. Measurements of the level of experience and familiarity with a specific situation and personal traits were also assessed in the sample to pretest for potential variance among respondents. As the sample used in this development phase is qualitatively similar to the samples that were planned to be used all along the research, these measurements allow having initial descriptions of future samples and their characteristics. The questionnaire used is presented in appendix 2. As privacy, personal space, territoriality and freedom of movement are conceptually opposed to density (in terms of valence), adequate recoding was adopted to reposition the concept on the same valence when a summation (overall effect) was needed and therefore ensure that they all capture human concentration.

3.1.2 Sample

Age is considered in few studies on crowding as a potential influencer of the way individuals react to dense environments (Pastalan and Pawlson, 1985; Altman, 1975). As this variable is not the focus of this study, an important concern in the sample composition is to limit age differences in the group in order to have more

homogeneous sensitivity to dense environments. Therefore, due to their relatively homogeneous distribution in terms of age distribution, undergraduate student samples were chosen for the remaining data collections in this research. In addition to the previous homogeneity concern, the very convenient access to the sample was an additional reason supporting the choice of the undergraduate student sample. Development sample sizes may be problematic if considered too low. Indeed, instability in factor structure or inability to reveal the underlying factor structure may be consequences of insufficient sample sizes (Reinecke Flynn and Pearcy, 2001). Previous studies suggest that sample sizes between 100 and 200 respondents are satisfactory in the development phase (Spector, 1992; Churchill, 1979). Our sample included 153 undergraduate students in a Canadian University (all under 30 years old and 52.6% are men whereas 47.4% are women).

3.4.3 Procedure and data collection

In this first data collection, undergraduate students registered in introductory marketing classes were asked to fill out the questionnaire. They first answered general questions related to personal traits and opinions about different settings such as bars or bookstores. They were then presented with a short video (30 seconds) of a leisure situation (bar). There were two different versions of the video shot from the same angle and at the same moment of different days. In one situation, the bar was busy whereas in the other one it was pretty quiet. Although no relationships were about to be tested at this stage, the different conditions were used to ensure that the items (scale) could capture both poles of the dense situations. Previous research

(Machleit et al, 2000) found that videotapes produced valid consumer responses to a given service encounter related to crowding issues. After the projection, respondents had to answer the remaining questions related to the human concentration (pool of items).

3.4.4 Results and Analysis

This purification step allows the removal of items with poor psychometric properties. Following previous studies' methods (Pedhazur & Schmelkin, 1991; Bearden et al, 2001; DeVellis, 1991), several analyses were performed.

First, items were considered for each dimension of the human concentration scale separately. Items with a corrected item-to-total correlation above 0.35 were retained for further analyses. Moreover, item intercorrelations were examined and a 0.20 criterion was applied for retention (Bearden et al, 2001; Tepper Tian et al, 2001).

Second, using a principal component factor analysis, a set of successive exploratory factor analysis was performed. Items that did not have a factor loading above the 0.50 threshold or those with high loadings on multiple dimensions were eliminated from the scale after each factor analysis until satisfactory psychometric properties were achieved (Bearden et al, 1989).

These analyses resulted in a reduced scale of 17 items that includes 5 dimensions of the perceived human concentration, namely freedom of movement (4 items), Privacy (2 dimensions of 3 items each), density (4 items) and personal space (3 items). The final exploratory factor analysis is presented in table1 along with the

reliability analysis for each dimension. Some results may not seem congruent with the theoretical development presented earlier. They are discussed hereafter.

Cronbach alphas for each dimension are as follows: 0.92, freedom of movement; 0.84, density; 0.74, personal space; 0.73, the first dimension of privacy as presented in the previous table; and 0.80, the second dimension of privacy as presented in the previous table. They all respect Nunnally's (1978) criterion (0.70). As underlined by the previous results, there are two main differences between the factorial structure proposed after the literature review and the one suggested by the exploratory factor analyses.

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
FREE9	.850				
FREE12	.817				
FREE8	.770				
FREE1	.715				
DEN1		.756			
DEN2		.736			
DEN5		.735			
DEN7		.651			
PER3			.841		
PER2			.831		
PER1			.758		
PRI19				.889	
PRI23				.833	
PRI24				.752	
PRI11					.809
PRI20					.717
PRI21					.676

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization

a. Rotation converged in 10 iterations. Loadings below 0.40 do not appear in table

Table 1. Results of the final exploratory analysis

The first difference lies in the disappearance of the territoriality dimension as a reflection of the perceived human concentration. Indeed, most of the items developed to measure this facet of human concentration show very poor psychometric properties. Their main problem is related to their inability to capture the territorial aspect and, as a result, most of them have multiple loadings on all the dimensions of human concentration and have to be removed one by one from the pool of items. If we go back to the origin of the concept in the literature review, it is important to remember that proposed definitions of territoriality include geographical areas notions, a specific need fulfilled by the territory, proofs or tentative displays of ownership and protection of a particular territory (Altman, 1975; Baum and Epstein, 1978). Using this definition and even if some authors suggest that concentration levels may influence individuals' relationships with their territory (Baron et al, 1978; Baum and Valins, 1977), it may be difficult to transpose their results for studies that deal with social settings and territories, which are very close to the individual (house, jail...), to studies with more anonymous commercial settings such as the one used in our data collection. Indeed, it may have been difficult for a consumer to imagine himself or herself claiming ownership over a part or totality of a public place such as a bar. This may explain the lack of representation of territoriality in our results. In any case, it is important to remember that we have adopted the development of a theoretical scale. This means that we must ensure the quality of measurement (especially construct validity and internal consistency) of our scale as it is designed to adequately perform in a more general model whereas, in the case of an applied scale, extensive care would have been given to offering the most complete picture of the

studied domain (Reinecke Flynn and Pearcy, 2001). Therefore, our first-order factors or indicators are all manifestations of human concentration and, even if the removal of one of them may reduce the number of observed consequences of concentrated settings for the individual, it should not change the real nature of the human concentration as well as the pertinence of the scale.

Second, results suggest that privacy may be captured by two distinct dimensions rather than only one. At this point, it seems difficult to confirm this finding based only on an exploratory analysis on one sample. Conceptually, the definition of privacy suggests that there may be more than one type of privacy or manifestation of it (Westin, 1970; Bates, 1964). Some aspects of privacy deal with the withdrawal or avoidance of interactions whereas others emphasize the freedom of choice regarding personal accessibility rather than the exclusion previously suggested. Interestingly, a qualitative analysis of the items measuring privacy in our scale suggests that they may be grouped either according to the fact that you can voluntarily withdraw from the situation or to the fact that others may interfere with your privacy. It is however too early in the study to decide if in fact there are two subdimensions to privacy or rather a measurement artifact that may be due to the wording of the items for example.

In conclusion to this purification stage and regarding the theoretical purpose of the scale developed, it is decided to advance to the next step in the scale development using the structure presented in table 1. The complete listing of the final 17 items to be used in the confirmatory stage is presented in table 3.

3.5. Confirmatory factor analysis

3.5.1 Questionnaire

For this step, the final version of the instrument to be tested (perceived human concentration scale) is ready for the more stringent test of a confirmatory factor analysis. In addition to the scale to be tested, which is constituted by the 17 items identified in the previous section, several measures were included for validity purposes. In fact, if convergent and discriminant validity may be evaluated through a computation based on the results of the confirmatory analysis, other measures should be added for potential additional tests of validity.

Items borrowed from the I-O scale (Kassarjian, 1962) and the CAD scale (Cohen, 1967), from the perception of retail crowding (Machleit et al, 1994) as well as single-item behavioral measures related to the consequences of different concentration situations were included in the questionnaire. Four additional single-items measures were created to provide a "global assessment" of privacy, personal space, density and freedom of movement and to give additional evaluation of convergent validity (Deng and Dart, 1994; Cadogan et al, 1999).

In addition to these scale development related measurements, several potential manipulations of variables to be implemented in the next study were pretested or prepared using the fact that samples are both undergraduate students in the two studies. For instance, the level of experience with the chosen setting was measured with items borrowed from consumers' involvement scale (Laurent et Kapferer, 1985) and prior experience scale (Kleiser and Mantel, 1994) and additional behavioral measures. The extent to which students feel similar to the crowd involved in the

setting was also assessed as a pretest. Finally, the leisure content of different service experiences was assessed using the hedonic and utilitarian shopping values scale (Babin et al, 1994). The questionnaire ended with some socio-demographics indicators.

3.5.2 Sample

In the same line as the sample used for the purification step of the scale development process, the questionnaire was distributed in classrooms to undergraduate students in a Canadian university. Guidelines regarding the sample size for confirmatory analyses suggest ratios of items to responses from 1:4 to 1:10 for the construct to be confirmed (Hinkin, 1995; DeVellis, 1991). Sample sizes between 100 and 300 are also considered as adequate for such an analysis (Reinecke Flynn and Pearcy, 2001; Spector, 1992). A final sample size of 225 respondents was adopted (under 30 years old and 46.9% are men whereas 53.1% are women).

3.5.3 Procedure and data collection

As in the first data collection, undergraduate students registered in introductory marketing and management classes were asked to fill out the questionnaire in their classroom. Different sections than the one used for the purification stage were chosen in order to prevent the same individuals from filling out the two surveys.

They received a questionnaire with a cover letter thanking them for their participation in this survey about services without further information. They first had to answer general questions related to personal traits and opinions about different

settings such as bars or bookstores. They had then to read a little scenario that was written to introduce them to a specific situation they were about to see. This was made to pretest parts of the scenario that would be used in subsequent study about crowd impact. They were then presented with a short video (30 seconds) of a leisure situation (bar), which was busy. As no relationships were about to be tested at this stage and as pretests regarding different levels of concentration were performed in the purification stage, this stimulus was deemed appropriate for our data collection. After viewing the videotape, respondents had to answer the remaining questions related to the human concentration scale and other general items regarding the way they felt about the situation they just encountered. These measures were used as a pretest for the next study.

3.5.4 Evaluation of the latent structure of the human concentration scale

In relation with the theoretical basis and the purification results, the new scale of perceived human concentration should exhibit the latent structure of a second-order model in which the five dimensions are first-order factors that collectively are accounted for by the second-order factor (Tepper Tian et al, 2001). Therefore, this model was specified using the sample covariance matrix as input via EQS 5.8 software.

The hypothesized model presented in figure 7 exhibits very acceptable fit indicators, as indicated by its CFI or Comparative Fit Index (0.942) and its RMSEA or Root Mean Square Error Approximation (0.049), which all satisfy the established criteria (above 0.90 for the CFI and below 0.07 for RMSEA) (Bollen, 1989). Moreover, due to χ^2's sensitivity to relatively small sample sizes and distributions

(Browne, 1989), a modified version of this indicator (the adjusted χ^2 (χ^2/df)) was adopted to take into account sample size issues. Therefore, while the χ^2 statistic was significant, it remained within the limits of 2.5 to 4 times the number of degrees of freedom (Bollen, 1989; Carmines et Mc Iver, 1981) with an adjusted χ^2 of 1.53 (χ^2/df = 173.42/113 = 1.53).

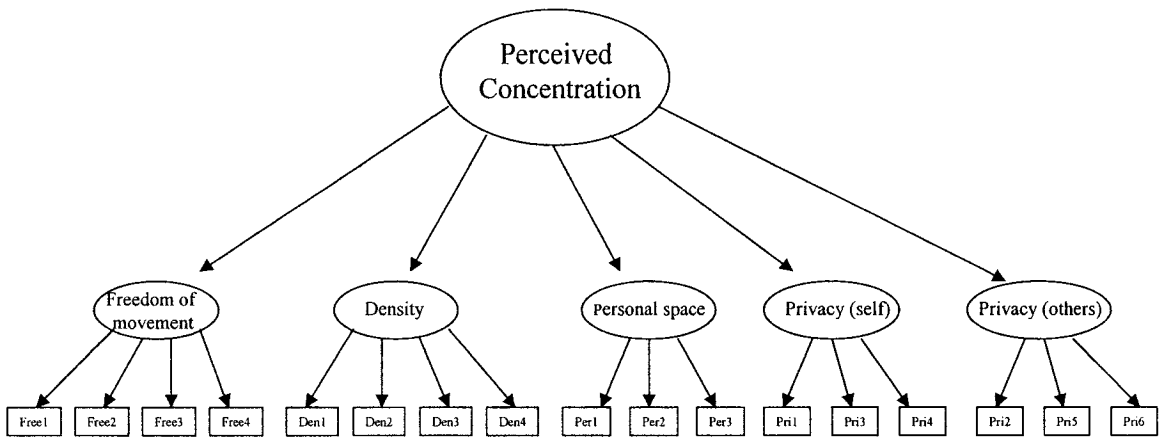
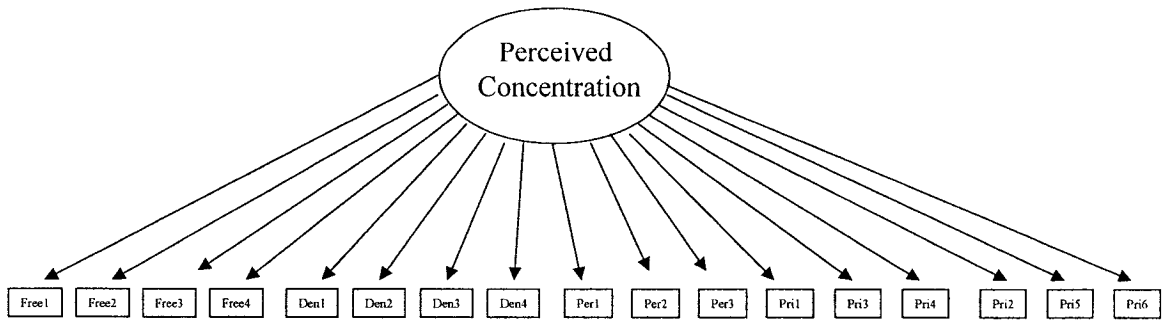


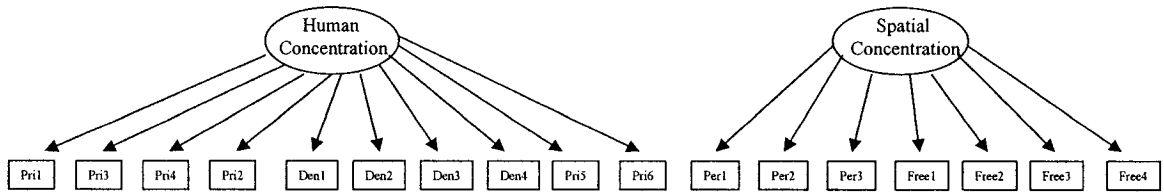
Figure 7 Human Concentration Measurement Model for confirmatory factor analysis (model 7)

Subsequently, in order to assess the relative quality of the hypothesized structure, six competing models based on alternative factor structures were estimated as follows: a null model (model 1); a one-dimensional model for which all 17 items were forced to load on a single factor (model 2); a two-factor uncorrelated model (model 3) for which items related to a concentration due to a human cause loaded on

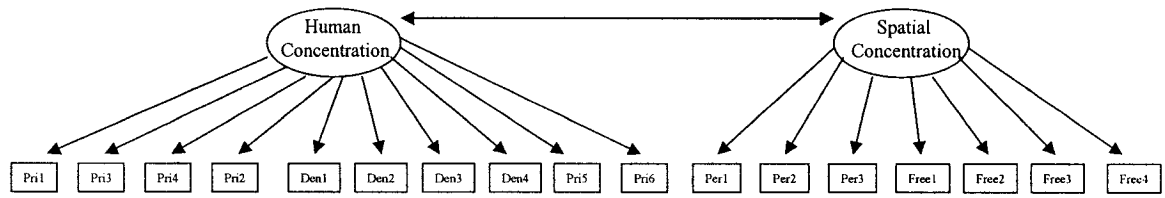
a single human concentration factor and for which items related to a concentration due to a design (spatial) cause loaded on a single spatial concentration factor (Machleit et al, 1994); a similar two-factor but correlated model (model 4); a five-factor orthogonal model (model 5) in which items load on five uncorrelated factors; a similar five-factor but correlated model (model 6) and finally the second-order factor model with five first-order factors (model 7) presented in figure 7. The competing models are presented in figure 8.



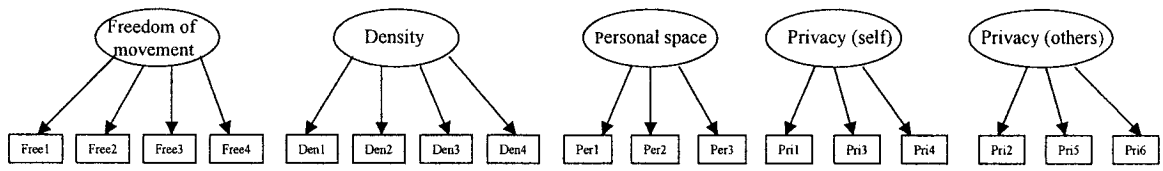
Model 2



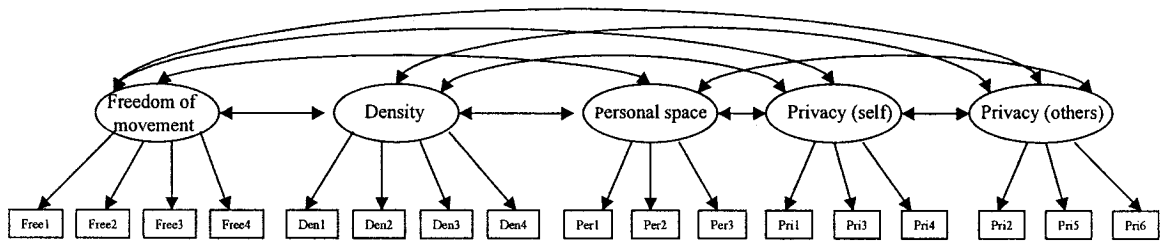
Model 3



Model 4



Model 5



Model 6

Figure 8- Competing Models

Each model is compared to the previous one in table 2 and the significance of the chi-square difference, considering the difference in degrees of freedom, gives an indication of the model giving the best representation of the data. If the improvement in the chi-square difference is below the statistical significance threshold, the most parsimonious model (highest number of degree of freedom) will be chosen to fit the data (Byrne, 1994; Tian et al, 2001). As underlined by the results, the second-order factor model with five first-order factors (model 7) and the five-factor correlated model (model 6) provide the best fit to the data when compared with the other models considered. There is no significant improvement between model 6 and model 7 but the latter is more parsimonious (113 df vs 108) and can therefore be chosen, confirming the fitting quality of the second-order factor model with five first-order factors (model 7). However, statistically, a second-order factor model with five first-order factors is equivalent to a five-factor fully correlated model (model 6) (Tian et al, 2001). These findings support the hypothesized structure including modifications following the purification step (model 7) of the perceived human concentration measurement. The final set of items used to measure human concentration is presented in table 3 along with the dimensions labels and respective loadings of items and dimensions on first and second-order factors.

An additional alternative factorial structure was tested in order to investigate the bi-dimensional aspect of the privacy factor suggested in the purification stage of the study. A four-factor correlated structure in which the six items related to privacy loaded on a single factor and where the other factors' structure remained unchanged was specified.

Model	Chi-square	Degrees of freedom	Chi-square difference[a] (df difference)	CFI	RMSEA
Null (model 1)	1163	136	N.A	N.A	N.A
One Factor (model 2)	681.25	119	481.75 (17)**	45.3	0.147
Two-factor uncorrelated (model 3)	647.24	118	34.01 (1)**	48.5	0.143
Two-factor correlated (model 4)	606.01	117	41.23 (1)**	52.4	0.138
Five-factor uncorrelated (model 5)	246.09	118	359.92 (1)**	87.5	0.071
Five-factor correlated (model 6)	167.8	108	78.3(10)**	94.2	0.056
Second Order (model 7)	173.1	113	5.3 (5)	94.3	0.057

** p<.01

a. successive comparisons: model 1 vs model 2, model2 vs model 3, model3 vs model 4, etc.

Table 2. Comparative Model Fit

Factor Item	Factor loading[a]
Personal Space:	.66
In this place, I am continuously and physically in contact with others	.61
People are very close to me in this place.	.85
I have literally no personal space in this place.	.68
Density:	.75
There are a lot of people in this place.	.65
This place is crowded.	.65
There are a high number of people in this place.	.78
This place is virtually empty.	.75
Freedom of Movement:	.87
I can easily walk through this place.	.75
In case of emergency, people could leave this place quickly.	.72
I can leave this place quickly if needed.	.71
It is easy to make my way through the crowd in this place.	.67
Privacy (self):	.66
I have time for myself in this place.	.83
I can spend some time by myself in this place.	.65
In this place, I will not be disturbed.	.63
Privacy (others):	.63
In this place, people are observing me.	.96
In this place, everybody can see what I am doing.	.66
I feel that people are intruding on the privacy of others in this place.	.57

a. Standardized loadings extracted from the final confirmatory factor analysis

Table 3. Human Concentration Scale Items (Factor loadings)

This model displayed relatively weaker fit indicators (CFI = 0.83, χ^2/df = 287/112 = 2.56, RMSEA = 0.085) than the five-factor correlated structure (CFI = 0.94, χ^2/df = 168/108 = 1.55, RMSEA = 0.056). In fact, the Chi-square difference between the two models suggests that the latter model fits significantly better the data. This result suggests that the bi-dimensional structure of the privacy factor is confirmed in this sample. It is therefore impossible to rule out the modified structure tested in the model 7. Furthermore, at this stage, it is impossible to decide if the structure is due to a measurement artifact or to a real theoretical and conceptual difference between two aspects of privacy.

3.6. Scale Reliability

3.6.1 Indicators

The internal consistency reliabilities were estimated through Cronbach Alpha coefficients for each dimension. They exceeded the minimum level of 0.70 recommended by Nunnally (1978) and could be presented as follows: 0.81, density; 0.74, freedom of movement; 0.75, personal space; 0.77, privacy (others); 0.74, privacy (self). The corresponding construct reliability estimates (Rho de Joreskog) (Fornell and Larcker, 1981; Joreskog and Sorbom, 1989) were computed using the standardized loadings given in the final confirmatory factor analysis. They were respectively 0.80 for density, 0.80 for freedom of movement, 0.76 for personal space, 0.78 for privacy (others) and 0.75 for privacy (self). Moreover, all indicators t-values were significant ($p < .01$). The results given by these indicators suggest satisfactory levels of reliability for the scale of perceived human concentration.

3.6.2 Test-Retest

An additional aspect of the scale reliability was evaluated through a test-retest approach. Questionnaires including the human concentration scale used in two different situations were pretested in the same group of 30 students two weeks apart. This sample was used to perform a test-retest reliability check. Very satisfactory results were obtained in this group with Cronbach Alpha coefficients all easily above the 0.70 threshold for the two data collections. Moreover, the scale was later used in an experiment designed to tap the crowd's influence on consumer satisfaction. The survey was distributed to 574 undergraduate students along with other questions. Once again, satisfactory results were found with Cronbach Alpha coefficients above the coefficients found in the previous studies. For instance, coefficients were respectively 0.97 for density, 0.92 for freedom of movement, 0.86 for personal space, 0.83 for privacy (others) and 0.73 for privacy (self).

3.7. Validity

Once the reliability and the structure of the measurement instruments are supported, the validity of the measurement model has to be assessed. Evaluation of convergent, discriminant and nomological validities are usually performed in scale development studies. In addition to these construct validities, known-group validity and cross-cultural validity are also tested in this study.

3.7.1 Discriminant Validity

The discriminant validity refers to "*the extent to which the concept considered differs from other concepts*" (Zaltman et al, 1973). For instance in our scale, each dimension should be different from another even if they share some variance as they all are reflects of human concentration. However, they should reflect different aspects and therefore be different concepts. There are different ways to evaluate discriminant validity.

First, the correlations between the dimensions were all significant and ranged between 0.11 for personal space-freedom of movement and 0.38 for freedom of movement-privacy (others). The average was 0.21. Each possible pair of factors was then considered and one-factor and two-factor structure models were alternatively specified. For any possible pair of factors, the chi-square difference between the two factors provided a strong support for discriminant validity ($p<0.01$). Moreover, the correlation between each pair of factors, plus or minus two standard errors did not include the unity (Anderson and Gerbing, 1988; Bearden et al, 2001), giving additional strength to the discriminant validity of our measure.

Second, an approach used in several scale development studies (Machleit et al, 1994 Bearden et al, 2001) was adopted. This method is based on the fact that there is a support for discriminant validity between two constructs when both average variance extracted (AVE) estimates for each construct exceed the variance shared between two constructs (the square of the correlation between these two constructs) (Fornell and Larcker; 1981). Estimates of AVE for each factor and evidence of discriminant validity are presented in table 4 hereafter.

3.7.2 Convergent Validity

The convergent validity refers to "*the extent to which two attempts to measure the same concept through different methods are convergent. It is generally represented by the correlation between the two attempts*" (Zaltman et al, 1973).

As underlined in the methodology part of this study, four single-item measures were used to evaluate the global perception of respondents regarding the privacy, freedom of movement, personal space and density levels they encountered in the situation they were facing. This method was deemed to be appropriate to evaluate convergent validity (Deng and Dart, 1994; Cadogan et al, 1999; Bearden et al, 2001). The correlations between these single items and their respective human concentration factors were all significant and averaged 0.55 and were as follows: 0.70 for density; 0.48 for freedom of movement; 0.51 for personal space; 0.62 for privacy (others) and finally 0.43 for privacy (self). All these correlations are higher then the ones between a single item and a non-related factor. These results provide a good evidence of convergent validity.

An alternative convergent validity check based on the average variance extracted is often used in the literature (Bearden and Netemeyer, 1999). It rests on the assumption that the convergent validity of the model is demonstrated if the average variance extracted (AVE) between a construct and its measures is above the 0.50 threshold. This AVE is in fact the square value of the parameter estimates (loadings) given by the confirmatory factor analysis. The results support additional evidence of convergent validity and are presented in Table 4.

Factor Item	Factor loading[a]	AVE	Correlations between factors	Square Correlation
Personal Space: Per		**0.52**	Per-Den = 0.135	**0.018**
Per1	0.61	0.38	Per-Free = 0.115	**0.015**
Per2	0.85	0.73	Per-PriS = 0.129	**0.016**
Per3	0.68	0.46	Per-PriO = 0.116	**0.015**
Density: Den		**0.55**		
Den1	0.65	0.42	Den-Free = 0.380	**0.144**
Den2	0.65	0.42	Den-PriS = 0.340	**0.12**
Den3	0.78	0.60	Den-PriO = 0.162	**0.020**
Den4	0.75	0.56		
Freedom of Movement: Free		**0.51**		
Free1	0.75	0.56	Free-PriS = 0.378	**0.144**
Free2	0.72	0.52	Free-PriO = 0.120	**0.015**
Free3	0.71	0.50		
Free4	0.67	0.45		
Privacy (self): PriS		**0.51**		
Pri1	0.83	0.70	PriS-PriO = 0.169	**0.03**
Pri3	0.65	0.42		
Pri4	0.63	0.40		
Privacy (others): PriO		**0.56**		
Pri2	0.96	0.92		
Pri5	0.66	0.43		
Pri6	0.57	0.33		

Table 4. Convergent and Discriminant Validity

3.7.3 Nomological Validity

The nomological or network validity refers to "*the extent to which predictions based on the concept which an instrument purports to measure are confirmed*" (Zaltman et al, 1973). These predictions may be related to antecedents, consequences or modifying conditions attached to the concept that is studied (Iacobucci et al, 1995; Tian et al, 2001). Using findings from the conceptual positioning of human concentration (density) presented previously in the literature review, a limited nomological validity check was performed. It focused primarily on the potential links between concentration and individual traits as suggested in previous research as well as the relationship between human concentration and human crowding as measured by Machleit et al (1994). A more complete analysis of the role of human concentration in a network of relationships was planned for the second study.

Differences in personality have been investigated in order to understand their potential influence on personal space levels and perceived crowding (Altman, 1975; Patterson et al, 1971, Cook, 1970). There is empirical support for the fact that people with outgoing personalities or high-social contact tempers are more tolerant of smaller interpersonal distances and of more frequent contacts than their introverted counterparts (Williams, 1971; Cook, 1970). Machleit et al (2000) report that individuals vary in term of their tolerance for crowding and that this individual trait may influence the level of perceived crowding (Dooley, 1974). There is at least another personality trait used in the consumer research literature that may have the same effect. Indeed, the I-O preference scale (Inner-Other Directedness; Kassarjian,

1962), which is related to social interaction may be interesting to consider regarding this issue.

This measure attempts to capture the extent to which people rely on others for guidelines or focus on their own values to find their way in society. Individuals who are more oriented towards others usually enjoy higher density (more interactions or advice) or, at least, do not perceive as many people in a given setting as they see concentrated settings as an opportunity.

All other factors being held constant, the orientation towards others (as measured by I-O) should then be negatively related to concentration perceptions.

In their research stream, Eroglu and Machleit (1990; 1994, 2000) use Rapoport's (1976) and others' (Altman, 1975; Stokols, 1972) definition of crowding which defines the concept as a negative affective evaluation of specific (high) density levels. This relationship has been tested in subsequent research and proposes an interesting avenue for further nomological validity, in which concentration and crowding should be positively related.

After a reliability check performed on the crowding and I-O measurements, the corresponding items on each concept were summed and the mean of the latent constructs was estimated. The same process was applied to the items measuring the five human concentration first-order factors and it was repeated for each factor in order to get a mean value capturing the overall perceived human concentration. This process would allow us to evaluate the potential relationships between the latent constructs (Bearden et al, 2001; Tian et al, 2001). As expected, the human concentration exhibited a strong and significant negative relationship with people

being more oriented towards others suggesting that the more you are oriented toward others the less you perceive human concentration ($r = -.29$, $p < 0.01$). On the contrary, no significant relationship was found regarding concentration and crowding in our data set. This was a surprising result as this relationship is well described in the literature. However, this might be explained by the fact that theory suggests that other moderating variables may play a major role in this relationship and it calls for additional findings about the contextual variable that supports the presence of this relationship.

In conclusion, we can say that we obtained mixed results regarding a limited test of nomological validity. The role played by human concentration in a greater network of relationships should be an important concern for the next study.

3.7.4 Known-groups Validity

In order to provide additional evidence of validity for the perceived human concentration scale, known-groups validity was assessed through the comparison of mean scores of the five first-order factors as well as the overall human concentration latent construct between groups of respondents that should a priori score either high or low on these constructs (Lastovicka et al, 1999; Tian et al, 2001; Bearden et al, 2001).

More specifically, data were collected from two undergraduate courses to reach a total sample size of 101 respondents. 59 students were presented with a video stimulus showing a bar situation in which there were many people (Friday night). Alternatively, 52 students were presented with the same situation with very few

people in the setting (Monday night). The difference in patronage level (estimation of the number of patrons) was pretested in the purification stage of this research and it was significant (M_{friday} = 140.5 vs M_{monday} = 22.8; $F_{(1,151)}$ = 45.56, $p<0.001$). If the developed human concentration scale was to perform adequately, significant differences should be captured by each of the dimensions as well as the overall latent variable. Moreover, these differences should reflect the a priori group differences suggested by the pretest.

Test of the mean differences between the Friday night group sample and the Monday night for the five first-order factors resulted in significant differences (at $p<0.01$) in the expected direction. An identical result was found for the overall concentration variable. They are presented in table 5. These significant comparisons provide additional support for the validity of the perceived human concentration scale.

Dependent Variable	(I) PATLEVEL	(J) PATLEVEL	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
						Lower Bound	Upper Bound
PER	1.00	2.00	-3.990*	.161	.000	-4.309	-3.672
	2.00	1.00	3.990*	.161	.000	3.672	4.309
DEN	1.00	2.00	4.138*	.154	.000	3.832	4.444
	2.00	1.00	-4.138*	.154	.000	-4.444	-3.832
FREE	1.00	2.00	-3.589*	.211	.000	-4.007	-3.170
	2.00	1.00	3.589*	.211	.000	3.170	4.007
PRIS	1.00	2.00	-2.085*	.149	.000	-2.380	-1.790
	2.00	1.00	2.085*	.149	.000	1.790	2.380
PRIO	1.00	2.00	-3.451*	.129	.000	-3.706	-3.195
	2.00	1.00	3.451*	.129	.000	3.195	3.706
CONCENT	1.00	2.00	3.451*	.129	.000	3.195	3.706
	2.00	1.00	-3.451*	.129	.000	-3.706	-3.195

For PATLEVEL: 1 = Friday Night (Many Patrons); 2 = Monday Night (Few Patrons)

*. The mean difference is significant at the .01 level.

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Table 5. Pairwise Comparison for known-group differences

3.7.5 Cross-Cultural Validity

This last step in our process of developing a scale of human concentration brings up a reflection about the evaluation of a potential cross-cultural stability of the instrument. Indeed, several studies have been conducted on the impact of cultural differences related to privacy issues (Lewis, 1961; Sinha and Nayyar, 2000) and personal space (Hall, 1966; Watson and Graves, 1966). Similarities have been found between Arabic, Mediterranean and Latin American societies in terms of exhibiting smaller distancing and higher levels of contact than Northern European and Caucasian North American groups (Altman and Vinsel, 1977; Baxter, 1970). As dimensions of the level of perceived human concentration, privacy and personal space (interpersonal distance), it is reasonable to expect that these cultural differences may also affect the overall level of human concentration.

Therefore, the methodology presented for the confirmatory analysis at the beginning of this chapter was applied on a different cultural group. After pretesting the stimulus used in the study and the questionnaire in the targeted cultural group (the Lebanese considered themselves as very similar to the people in the video $M_{similarity}$ = 5.9 and no significant differences were found with the Canadian sample $M_{similarity}$ = 6.1), data were collected from a Lebanese sample in an English speaking university in Beyruth (Lebanon). 244 undergraduate students completed the survey. 66.1% were male whereas 33.9% were female and they were all under thirty years old.

In order to assess the strength of the human concentration scale's cross-cultural properties, several confirmatory factor analyses were performed at the multigroup level (across the two cultural groups) to study the measurement invariance of the

instrument. We were principally interested in the configural invariance and the metric invariance of the scale for the validation process (Durvasula et al, 2001).

The hypothesized higher-order structure with five first-order factors (figure 7) was specified and the fit to the Lebanese data was evaluated. The minimum requirement for the human concentration measure to be invariant cross-culturally is to show that the hypothesized structure provides a good fit in the two cultural groups (Durvasula et al, 2001). Indeed, items of the scale must exhibit significant zero loadings on non-salient factors and non-zero loadings on salient factors. For instance, items measuring privacy should have significant non-zero loadings on this concept and zero loadings on all other dimensions (Horn and McArdle, 1992). In fact, the fit indicators of the overall model (CFI, Chi-square) only evaluate simultaneously if the fixed zero factor loadings or path coefficients are indeed zero. They do not test if the free parameters are nonzero. It has to be done subsequently with the use of standard errors (z tests) to evaluate if the respective free parameters (loadings in our case) are equal to zero.

If these aspects were already evaluated and satisfactory in the Canadian sample (confirmatory factor analysis), the process had to be repeated for the Lebanese sample. In this case, the hypothesized model had a χ^2 value of 299.8 for 113 degrees of freedom with an adjusted χ^2 of 2.65 (χ^2/df = 299.8/113 = 2.65), a CFI of 0.91 and its RMSEA or Root Mean Square Error Approximation (0.071). All these fit indicators satisfy the established criteria (Bollen, 1989) and support the fact that the proposed model fits the data adequately in the Lebanese sample. Furthermore, the strength of the hypothesized model was underlined by the individual item factor

loading scores. All these items loadings were significant ($p<0.05$) on their respective dimension (table 6). These results suggest a similar factor structure for the concentration measure across the 2 samples (configural invariance).

If the configural invariance suggests that the items and the structure used to conceptualize human concentration is similar in the two cultural groups, it does not imply that consumers respond to the items following the same pattern. In order to effectively evaluate if individuals in the two countries evaluate concentration in the same way, an evaluation of the metric invariance has to be performed. This invariance test gives indications whether or not responses to the scale items can meaningfully be compared cross-nationally (Durvasula et al, 2001; Steenkamp and Baumgartner, 1998). Following this approach, a multigroup analysis was performed and item loadings were constrained to be equivalent across the two cultural groups. As a result, the multigroup analysis had a χ^2 value of 1172.2 for 238 degrees of freedom with an adjusted χ^2 of 4.95, a CFI of 0.70 and a RMSEA or Root Mean Square Error Approximation of 0.102. This suggests a poor fit to the data and therefore a lack of full metric invariance. The constraints analysis indicated that 13 constraints out 22 should be released.

Factor Item	Factor loading[a]
Personal Space:	.58
In this place, I am continuously touched by others	.60
People are very close to me in this place.	.77
I have literally no personal space in this place.	.78
Density:	.94
There are a lot of people in this place.	.93
This place is crowded.	.72
There are a high number of people in this place.	.76
This place is virtually empty.	.59
Freedom of Movement:	.69
I can easily walk through this place.	.60
In case of emergency, people could leave this place quickly.	.68
I can leave this place quickly if needed.	.72
It is easy to make my way through the crowd in this place.	.84
Privacy (self):	.61
I have time for myself in this place.	.70
I can spend some time by myself in this place.	.56
In this place, I will not be disturbed.	.76
Privacy (others):	.63
In this place, people are observing me.	.70
In this place, everybody can see what I am doing.	.67
I feel that people are intruding on the privacy of others in this place.	.60

a. Standardized loadings extracted from the final confirmatory factor analysis

Table 6. Human Concentration Scale Items (Factor loadings) for the Lebanese

Most of these constraints deal with the measurement of density and privacy (others) and also with the second-order factor and the respective five first-order factors. After the release, the model showed a significant improvement and an adequate fit to the data with a χ^2 value of 654.5 for 225 degrees of freedom with an adjusted χ^2 of 2.90, a CFI of 0.86 and a RMSEA or Root Mean Square Error Approximation of 0.072. This result showed that there is a partial metric invariance of the human concentration measure between the two cultural groups. Some dimensions as well as the manifestations of the overall construct through the dimensions are not equivalent across the two cultures.

Globally, the general stability of the human concentration scale across the two cultural groups was not demonstrated. However, the configural invariance suggests that the human concentration is measured in the same way across these two groups but scores cannot be fully compared, as the metric invariance is only partial. This gives partial support to the cross-cultural validity of the developed scale. Moving away from the validation process, further research on these cross-cultural differences in terms of measurement should be considered before using a similar scale in a more global model. A deeper analysis of similarity and differences between cultural groups in trying to explain measurement differences should constitute an interesting additional area of research.

4. *Summary*

This chapter reports on the development and validation of an instrument that measures perceived human concentration in a given setting. Results provide evidence regarding the dimensionality, reliability and validity of the proposed scale. In

particular, the evidence includes convergent, discriminant and known-group validities as well as limited evidence of nomological and cross-cultural validity. Moreover, perceived human concentration is conceptualized as an higher-order latent construct that is reflected by five intercorrelated dimensions: density, freedom of movement, personal space, privacy (self) and privacy (others). These finding allows us to conclude that the proposed measurement instrument is valid and reliable and that hypothesis 1 is supported. It is important however to consider a few specific remarks.

First, the measurement model adopted is slightly different from the one hypothesized from the literature review. Indeed, the territoriality dimension mentioned in the literature has been removed due to the poor psychometric properties of the generated items. Two explanations are possible. First, generated items were poorly created and not representative of the concept and territoriality should still be considered in the measurement of concentration but future research should work at developing better indicators. Secondly, concentration levels may influence individuals' relationships with their territory in studies that deal with social settings and territories that are very close to the individual (house, jail...) (Baron et al, 1978; Baum and Valins, 1977) but it may be difficult to transpose their results to anonymous commercial setting as the one used in our data collection, in which people may have difficulties to appropriate public spaces such as bars or bookstores. In this case, the absence of territoriality may be acceptable as we develop a theoretical scale based on reflective indicators and our ultimate goal is to use the developed construct in a larger theoretical model therefore to maximize construct validity, even at the expense of content validity (Reinecke Flynn and Pearcy, 2001).

Second, the concept of privacy was initially conceptualized as a unidimensional construct. However, purification and confirmatory analyses strongly support the superiority of a bi-dimensional configuration. If theoretical explanations support this claim (Westin, 1970; Bates, 1964), one can question the nature of the bi-dimensional configuration that may also be attributed to measurement artifact as each dimension refers either to "I" worded items or "people" worded items. The investigation of this conceptual difference should be considered in future research on privacy issues and on future scale refinement.

Third, the cultural issue is essential in studies on the impact of concentration on individuals' behaviors. The cross-cultural validation proposed in this chapter suggests only a partial but present invariance between measurement among Canadians and Lebanese. This avenue needs to be further investigated before any comparison on concentration's impact on consumers between countries can be implemented. The fact that it exists a configural invariance is very important. It would be necessary to explain the reasons and the origins of the limited metric invariance.

Finally, evidence of nomological validity was limited in the study as the goal of this scale development is not just to develop a valid and reliable measurement scale but to integrate it in a larger network of relationships: a nomological network as suggested by Anderson and Gerbing (1988). The next chapter of this thesis will follow this approach with the introduction of human concentration in a larger theoretical model testing for potential relationships that would reinforce assessment of validity of the human concentration scale.

CHAPTER V

IMPACT OF PERCEIVED HUMAN CONCENTRATION ON THE SATISFACTION WITH A SERVICE EXPERIENCE: AN EMPIRICAL STUDY

1. *Overview*

As underlined in the literature review, the impact of human concentration on the satisfaction with the service experience is neglected in many of the studies on the presence of a crowd in a retail setting (Eroglu and Machleit, 1990; Machleit et al, 1994; Machleit et al, 2000). In fact, the focus is limited to the concept of crowding and its negative impact on satisfaction. The goal of this study is to reconsider the limited role given to density in the process leading to satisfaction and to show that this process is very complex and that it is more initially driven by concentration than crowding. The previous chapter has shown the measurement properties of the concept of concentration. Following the hypotheses made in chapter 3, we intend in this chapter to show that this construct is related to satisfaction through indirect and direct relationships and that several moderators may change its role in the process and may even lead to positive outcomes for the consumer. This would break the classical approach to crowded retail setting that could be summarized as ***"the fewer, the better"*** and offer new avenues for crowd management and research.

2. *Methodology*

2.1. Research Design and Sample

In this study, as presented in the literature review, the nature of the shopping situation (leisure versus utilitarian), the level of scarcity of the situation (scarce versus non-scarce) and the disconfirmation of the concentration level (Positive Disconfirmation versus Confirmation of a non-concentrated situation versus Confirmation of a concentrated situation versus Negative Disconfirmation) were manipulated independently and their effects were studied. In short, a 2 (leisure shopping situation and utilitarian shopping situation) X 2 (Scarce service and non-scarce service) X 4 (Positive Disconfirmation versus Confirmation of a non-concentrated situation versus Confirmation of a concentrated situation versus Negative disconfirmation) factorial design was used in this experiment to evaluate the hypotheses of the second study. Written scenarios and video stimuli were employed to operationalize the manipulated variables. The scenarios were written by the researcher, reviewed by experts and pretested. The video stimuli were shot and edited by a professional. Several sites were visited and successive shots were shown to small groups of consumers and to the researcher to identify the most adequate situations for the research and manipulation purposes. This process required three separate shootings after the rejection from the judges before final shots got accepted and edited for more classical pretests and then the final data collection.

The two situations chosen for the final questionnaire, as either leisure or utilitarian, were identified through pretests among students used in the purification stage of the data collection. 153 Students were asked to rate 6 situations (bar,

restaurant, hockey game, mall, bank and bookstore) using the hedonic side of the hedonic and utilitarian shopping values scale (Babin et al, 1994). The two situations with the lowest (bookstore) and the highest (bar) average scores were significantly different on a 7-point Likert scale (M_{bar} = 6.2 vs $M_{bookstore}$ = 3.1; $F_{(1,151)}$ = 95.52, $p<0.001$). Therefore, a bar and a bookstore situation were adopted for the final study. Cues about the shopping situation were given in the written scenario that was read and distributed to the consumer.

The level of scarcity of the service situation encountered by the respondents was manipulated through written scenarios. Wording was made in such a way that the scarcity level should vary as expected. The scenarios are presented in appendix 3. The statements were also pretested along with the other manipulated variables. A convenience sample of 30 students was asked to read the corresponding scenarios and to picture themselve in the described situation. Results showed a significant difference in the aggregated average score of measured scarcity between the scarce versus non-scarce situations (M_{scarce} = 5.1 vs $M_{non\text{-}scarce}$ = 3.3; $F_{(1,62)}$ = 21.76, $p<0.001$).

The confirmation/disconfirmation variable was manipulated in two steps. First, expectations of concentration were manipulated through the written scenario, in which clear statements about what to expect in terms of a crowd were made. Then, after consumers went on with the questionnaire for a few questions, a short video of the setting with different numbers of customers was presented. In one condition, there were a lot of consumers whereas in the other one there were only few. This many/few customers variable was used as a trigger for future concentration assessment through

the developed scale. This manipulation was also pretested using the same sample as scarcity (same data collection indeed). Significant differences were found for the average of the aggregated score of expectation (3 items) on a 7-point Likert scale ($M_{highexp}$ = 6.1 vs M_{lowexp} = 3.1; $F_{(1,62)}$ = 164.3, $p<0.001$) and for the estimation of the number of person (1question) (M_{many} = 118.9 vs M_{few} = 6.9; $F_{(1,62)}$ = 53.8, $p<0.001$) as well as the estimated overall concentration score (M_{many} = 5.0 vs M_{few} = 1.8; $F_{(1,62)}$ = 435.1, $p<0.001$) on a 7-point Likert scale. All the pretests seemed to indicate adequate manipulations. In summary, the confirmation/disconfirmation variable was operationalized as follows: the positive disconfirmation was triggered through low expectations and a video that shows a crowd in the chosen environment whereas the negative one was triggered through high expectations in terms of human concentration in the written scenario with a video featuring a limited crowd. Control groups were also used for matching pair of expectations and actual perceptions. According to the type of expectations initially triggered, respondents were either in a high concentration confirmation or in a low concentration confirmation. In fact, using the 2 (high versus low expectations) X 2 (high versus low perceptions) allows us to create a four (4) level confirmation/disconfirmation variable as presented in table 7.

This manipulation also presents the advantage of having high/low human concentration levels and high/low expectations individually in case we do want to treat only one of these variables. In fact, this design is equivalent to a 2 (bar versus bookstore) X 2 (Scarce versus non-scarce service) X 2 (high versus low expectations regarding human concentration) X 2 (many versus few customers perceived). It is exactly the same design as previously proposed with 16 cells (table 7). Manipulation

checks for each of the manipulations were planned for the data collection to be implemented for the study.

Subjects	Expectations of human concentration	Number of customers in the setting	Confirmation/ Disconfirmation	Shopping Situation	Scarcity of service
Group 1	High	High	High confirmation	Leisure	High
Group 2	High	High	High confirmation	Leisure	Low
Group 3	High	High	High confirmation	Utilitarian	High
Group 4	High	High	High confirmation	Utilitarian	Low
Group 5	High	Low	Negative Disconfirmation	Leisure	High
Group 6	High	Low	Negative Disconfirmation	Leisure	Low
Group 7	High	Low	Negative Disconfirmation	Utilitarian	High
Group 8	High	Low	Negative Disconfirmation	Utilitarian	Low
Group 9	Low	High	Positive Disconfirmation	Leisure	High
Group 10	Low	High	Positive Disconfirmation	Leisure	Low
Group 11	Low	High	Positive Disconfirmation	Utilitarian	High
Group 12	Low	High	Positive Disconfirmation	Utilitarian	Low
Group 13	Low	Low	Low confirmation	Leisure	High
Group 14	Low	Low	Low confirmation	Leisure	Low
Group 15	Low	Low	Low confirmation	Utilitarian	High
Group 16	Low	Low	Low confirmation	Utilitarian	Low

Table 7. Experimental Design for the final study

Sixteen groups were necessary to implement the experimental design planned. Therefore, a sample of about 480 subjects (i.e around 30 per cell) was targeted for the final data collection. As undergraduate students were chosen, 25 introductory business courses with at least 30 students registered were randomly selected and instructors were contacted in order to have their cooperation for a data collection that would last 20 minutes at the beginning of their class. Seventeen accepted and sixteen groups remained in the final data collection. In each group before the survey starts, students were asked not to fill up the questionnaire if they had previously been in a course that was surveyed. The final sample had 574 respondents (groups ranging from 44 to 33 respondents). 97.4 % were under the age of 30 and 54.6% were female whereas 45.4% were male.

2.2. Procedure

Subjects were visited while attending a class. The researcher presented the study as a general survey about students' habits regarding different services situations. They each received a questionnaire and were told to read the first page of instructions and to wait for directions from the researcher. When turning the first page, they had to fill up a page of questions related to general traits measures. Then on page 3, a scenario describing a service situation was presented. The researcher read it aloud while students could also read it. They were asked at the end to really picture themselves in the situation. This point was emphasized. They turned the page and filled up the first part of the questionnaire where they were asked about their expectations in terms of

concentration level for the situation previously described in the scenario. On the next page, the scenario was repeated and read again by the interviewer in order to insist on the situation and on the fact that they had to imagine themselves in the situation. In addition, they were told that they were about to enter the service setting previously described. Then, a short video (1 minute), supposed to depict the situation previously described, was presented two times. They were told to look carefully at the video. After viewing the video, they then had to fill up the questionnaire till the end. Perceived human concentration was then measured along with the affective evaluation of the situation and their potential satisfaction with the service situation. Additional measures such as socio-demographic variables and additional manipulation checks (such as similarity with the crowd in the video) were also assessed. Subjects were then debriefed, thanked and dismissed.

2.3. Measures

A self-administered questionnaire was used to gather the data. All the items were measured on a 7-point Likert scale.

The first set of questions dealt with general traits and habits of the respondents. A few items were borrowed from the Inner-Other directedness scale (I-O, Kassarjian, 1962), the compliance dimension of the Interpersonal Orientation scale (CAD, Cohen, 1967), the consumer expertise (Kleiser and Mantel, 1994), the attention to social comparison (ATSCI, Lennox and Wolfe, 1984), the normative dimension of the consumer susceptibility to interpersonal influence (CSII, Bearden et al, 1989) and the individualism/ collectivism scale (Hofstede, 1980).

The Human Concentration scale developed in study 1 was then used to assess subjects' expectations after the written scenario but before the video stimulus and their actual perceived human concentration after the video stimulus. The 17 items forming the human concentration scale were adapted to reflect expectations (rephrased with "I expect" in place of "I am" for example) in the first part whereas the actual unchanged items were used in the post-video questions. Four additional single-items measures were also created to provide a direct assessment of the expectation-perception discrepancy for each dimension considered (privacy, personal space, density and freedom of movement) as suggested in previous studies on satisfaction (Weaver and Brickman, 1974; Oliver, 1997). The affective evaluation was assessed by asking respondents after each item of the human concentration scale in the post-video section whether or not they appreciated (liked) this feature.

In addition, several items borrowed from the dimensions of emotions (PAD, Mehrabian and Russell, 1974) and the emotion types (Izard, 1977) were used to evaluate the emotional reactions to the situation encountered.

Satisfaction was measured for the overall service experience as suggested by Oliver (1997). Items were borrowed from his consumption satisfaction scale and Machleit et al's scale (2000). They were adapted to the service situation.

Socio-demographics measures and the overall estimation of the number of customers in the setting (video) were also included. Several manipulations check measures such as the level of perceived similarity with the crowd, the perceived service scarcity, the leisure content of the situation as well as other general consumers' characteristics such as the level of experience with the chosen setting

(consumers' involvement scale, Laurent and Kapferer, 1985) were also added throughout the survey. The final instrument is presented in appendix 4.

3. *Results and Analyses*

3.1. Manipulation Checks

3.1.1 Shopping situation

The two situations chosen for the final questionnaire, as either leisure or utilitarian, were respectively a bar and a bookstore. In this first manipulation check, using the average score of the hedonic shopping values items (Babin et al, 1994), students identified the bar situation as more hedonistic than the bookstore situation. The two situations were significantly different on a 7-point Likert scale (M_{bar} = 5.1 vs $M_{bookstore}$ = 2.6; $F_{(1,572)}$ = 941.52, $p<0.001$). The results indicate that the shopping situation manipulation was effective for the subjects.

3.1.2 Scarcity

The level of scarcity of the service situation encountered by the respondents was manipulated through the written scenario. The quality of the manipulation was evaluated using three items capturing the perceived service scarcity from the consumer perspective after they were exposed for the first time to the written scenario. These items were similar to the ones used in the pretest part of the study. Results showed a significant difference in the average score of perceived scarcity between the scarce versus non-scarce situations (M_{scarce} = 4.0 vs $M_{non\text{-}scarce}$ = 3.1; $F_{(1,572)}$ = 77.85, $p<0.001$) supporting the effective manipulation.

3.1.3 Confirmation/Disconfirmation

The confirmation/disconfirmation variable manipulation was checked in two steps. First, expectations of human concentration after reading each possible scenario were compared to each other. An indicator of crowd expectations was calculated using the 17 items from the scale previously developed. The average score for the 17 items (with the adequate valence) was then compared for the two different scenarios (High versus low expectations). The two situations were significantly different on a 7-point Likert scale ($M_{highexpectations}$ = 5.4 vs $M_{lowexpectations}$ = 2.8; $F_{(1,572)}$ = 918.8, $p<0.001$).

Second, using the short video of the setting and the manipulation of the number of people in the setting, the perception of human concentration was measured and an indicator of concentration perceptions was calculated using the average score of the 17 items from the human concentration scale. This score was then compared for the two different situations (Many versus few customers). Significant differences were found on a 7-point Likert scale (M_{many} = 5.3 vs M_{few} = 2; $F_{(1,572)}$ = 3132.3, $p<0.001$). This result supports the manipulation used to trigger high or low perceptions of human concentration.

These two results confirmed that manipulations were effective in creating the 2 (high versus low expectations) X 2 (high versus low perceptions) design. However, an additional manipulation check was performed using paired sample T-tests in order to ensure that the 4 groups created using this design reflected adequately the confirmation/disconfirmation variable manipulation. The means of human concentration perceptions and expectations were compared in each of these groups. In

fact, as expected, in the positive disconfirmation, consumers perceived a significantly higher level of human concentration than what they were expecting to ($M_{perceptions}$ = 5.6 vs $M_{expectations}$ = 2.8; $t_{(146)}$ = 31.5, $p<0.001$). Also, in the negative disconfirmation, they perceived a significantly lower level of human concentration than what they were expecting to ($M_{perceptions}$ = 1.90 vs $M_{expectations}$ = 5.5; $t_{(146)}$ = 47.8, $p<0.001$). Finally, there were no significant differences in terms of human concentration perceptions and expectations in the confirmations situations. High levels of human concentration were confirmed in the high confirmation situation ($M_{perceptions}$ = 5 vs $M_{expectations}$ = 5.2; $t_{(136)}$ = 1.3, $p=0.184$) whereas low levels were confirmed in the low confirmation situation ($M_{perceptions}$ = 2.6 vs $M_{expectations}$ = 2.9; $t_{(142)}$ = 1.45, $p=0.137$). These additional results reinforced the support for adequate manipulations and the conformity with the experimental design of the study.

3.1.4. Similarity with crowd members

The two situations chosen for the final questionnaire used a crowd presented through a video shot in bar and in a bookstore. Using the average score of the similarity items introduced in the questionnaire, an analysis of variance was performed. Respondents did not perceive any difference in the perceived dissimilarity between them and the people in the crowd ($F_{(15,558)}$ = .957, $p=.413$). The mean score for the overall group is 4.8 and the median 5.5. These results indicate that the respondents did not feel dissimilar to the subjects use in the respective service situations.

3.2. ANOVAand MANOVA analyses

In this section, both univariate and multivariate analyses of variance were performed so as to examine the effect of the manipulated variables on the measures of affective evaluations of the concentration situation and satisfaction with the service experience.

As previously described, the satisfaction was measured through 5 items borrowed from Oliver's satisfaction scale (1997) and Machleit et al's scale (2000). This measure has an alpha Cronbach of 0.90 well above the 0.70 threshold. The average score of the five items was used for the analyses of variance. Moreover, the affective evaluation of the concentration level encountered was captured through the average score of liking for the measured concentration (average of 17 items).

3.2.1 Main Effects

No formal hypotheses were made in this study (except for scarcity) regarding potential main effects of the manipulated variables. Indeed, the emphasis was made on the fact that, contrary to previous studies (Eroglu and Machleit, 1990 in particular), density (concentration) alone did not necessarily lead to crowding (negative affective evaluation) and dissatisfaction. It is suggested here that the triggering mix is more complicated and interactions between several variables might be needed. In order to respect previous studies' suggestions, main effects of the studied variables were however tested.

3.2.1.1 Main effects of Confirmation/Disconfirmation

The mean comparisons of satisfaction and affective evaluation of concentration level did not reveal any main effect of the confirmation/disconfirmation variable. Indeed, there was no significant mean difference in terms of satisfaction ($F_{(3,570)}$ = 1.52, p=0.206) between positive disconfirmation ($M_{positive\ disconfirmation}$ = 4.03), high confirmation ($M_{high\ confirmation}$ = 3.73), low confirmation ($M_{low\ confirmation}$ = 3.84) and negative disconfirmation ($M_{negative\ disconfirmation}$ = 3.99). Moreover, there was no significant mean difference in terms of affective evaluation of the concentration situation ($F_{(3,570)}$ = 1.95, p=0.125) between positive disconfirmation ($M_{positive\ disconfirmation}$ = 4.84), high confirmation ($M_{high\ confirmation}$ = 5.95), low confirmation ($M_{low\ confirmation}$ = 5.02) and negative disconfirmation ($M_{negative\ disconfirmation}$ = 5.124).

Machleit et al (2000), in the first introduction of expectations in an empirical study, suggested that shopper satisfaction would be higher in negative disconfirmation and lower in positive disconfirmation cases. They found mixed results in their three studies. In our framework, we also find inconclusive results for the lone effect of expectations on satisfaction through the confirmation/disconfirmation variable. Interactions effects are examined later in this study.

3.2.1.2 Main effects of Scarcity

The main effect of the scarcity levels manipulated through the written scenarios was tested using an ANOVA. Very few studies have considered this variable as having a potential impact on satisfaction within a service experience. Trait variables

such as the need for uniqueness (Tian et al, 2001) or counterconformity (Snyder, 1992) have been mentioned in the literature but nothing related to the experience or the situation itself has ever been tested. In this study, a significant effect of the scarcity of the service situation was found on the affective evaluation of the human concentration situation (M_{scarce} = 4.51 vs $M_{non\ scarce}$ = 3.59; $F_{(1,572)}$ = 223.40, $p<0.001$) as well as on the satisfaction of the consumer (M_{scarce} = 3.97 vs $M_{non\ scarce}$ = 3.57; $F_{(1,572)}$ = 10.36, $p<0.001$).

This result provides a first support for hypothesis 8. However, due to the lack of established strong empirical and theoretical explanations about the exact role played by the scarcity variable in the service experience, further investigations need to be implemented. In particular, we try to give a clearer understanding of how this variable may interact with other contextual variables in our framework.

3.2.1.3 Main effects of Situation

There should be a-priori no main effect of the situation (leisure versus utilitarian) encountered by the consumer on the affective evaluation of the human concentration or satisfaction with the service experience. For instance, one should not be more satisfied of being in a bar or in a bookstore. It all depends on the reason that brings the consumer in the situation. Indeed, being in a utilitarian (bookstore) setting for a utilitarian purpose (buy a book) may be as satisfying as being in leisure (bar) setting for a leisure reason (have a good time). In our manipulation, consumers were either in a bar for a leisure reason or in a bookstore for a utilitarian reason. Therefore, this match should not lead to a main effect of situation on satisfaction. Mismatch

situations were not considered, as this variable was not manipulated. The results obtained from ANOVA showed that there was effectively no main effect of the situation on the two measures considered. Indeed, the situation had no effect on the affective evaluation of the human concentration level (M_{bar} = 5.08 vs $M_{bookstore}$ = 4.96; $F_{(1,572)}$ = 1.825, p=0.177) and on the satisfaction level (M_{bar} = 3.91 vs $M_{bookstore}$ = 3.88; $F_{(1,572)}$ = 0.087, p=0.768). The role of the type of situation encountered by the consumer was further explored in the interaction analyses.

3.2.2 Interaction Effects

Interaction effects of the manipulated variables on satisfaction and affective evaluations of the human concentration were analyzed. MANOVAs were performed and the overall results and significance are presented in table 8. Results are then discussed for each significant effect.

Source of Variation	MANOVA	Affective evaluation	Satisfaction
Situation (A) by Confirmation/Disconfirmation (B)	175.1***	478.3***	183.4***
Situation (A) by Scarcity (C)	4.10***	5.4***	5.9***
Confirmation/Disconfirmation (B) by Scarcity (C)	8.15***	1.4	9.3***
Situation (A) by Confirmation/Disconfirmation (B) by Scarcity (C)	1.06	1.1	1.3

*** p<0.001

Table 8. Multivariate and Univariate F-Values for the dependent variables

The MANOVA results show significant two-way interaction effects for the three manipulated variables combinations. We therefore conducted univariate follow-up analyses to pinpoint these effects. The results are presented in table 9. There is however no significant three-way interaction effect.

Source	Dependent Variable	F	P
Situation (A)			
A within B (1)	Affective Evaluation	357.1***	0.000
	Satisfaction	180.6***	0.000
A within B (2)	Affective Evaluation	236.9***	0.000
	Satisfaction	71.6***	0.000
A within B (3)	Affective Evaluation	29.1***	0.000
	Satisfaction	41.8***	0.000
A within B (4)	Affective Evaluation	804.6***	0.000
	Satisfaction	270.10***	0.000
A within C (1)	Affective Evaluation	1.467	0.227
	Satisfaction	.975	0.324
A within C (2)	Affective Evaluation	6.42**	0.012
	Satisfaction	.945	0.332
Confirmation/Disconfirmation (B)			
B within A (1)	Affective Evaluation	104.3***	0.000
	Satisfaction	60.5***	0.000
B within A (2)	Affective Evaluation	302.6***	0.000
	Satisfaction	157.6***	0.000
B within C (1)	Affective Evaluation	1.26	0.292
	Satisfaction	5.6***	0.001
B within C (2)	Affective Evaluation	2.11	0.122
	Satisfaction	1.83	0.142

Scarcity (C)			
C within B (1)	Affective Evaluation Satisfaction	0.019 1.154	0.890 0.284
C within B (2)	Affective Evaluation Satisfaction	0.919 4.41**	0.340 0.038
Scarcity (C) (continued)			
C within B (3)	Affective Evaluation Satisfaction	1.82 16.8***	0.141 0.000
C within B (4)	Affective Evaluation Satisfaction	1.6 4.4**	0.191 0.038
C within A (1)	Affective Evaluation Satisfaction	0.261 5.688**	0.610 0.018
C within A (2)	Affective Evaluation Satisfaction	0.688 0.172	0.678 0.407

**p<0.05; ***p<0.001.

Numbers in () represents respective levels of variables (Situation: Bar =1, Bookstore =2; Confirmation/Disconfirmation: Neg Disc = 1, High conf = 2, Low Conf = 3 and Pos Disc = 4; Scarcity: Non scarce =1 and Scarce = 2)

Table 9. Simple Effects Analysis for significant Two-way interactions

3.2.2.1 Interaction effect of Situation (A) by Confirmation/Disconfirmation (B)

Results in table 8 and 9 as well as figure 9 suggest that subjects' confirmation/disconfirmation of prior expectations regarding human concentration interact with the situation to alter the affective evaluation of the concentration situation and their overall satisfaction of the situation. Differences were detected between the leisure setting (bar) and the utilitarian setting (bookstore) for a negatively disconfirmed situation for affective evaluation (M_{bar} = 3.4 vs $M_{bookstore}$= 6.1; $F_{(1,145)}$ = 357.1, $p<0.001$) and satisfaction (M_{bar} = 2.8 vs $M_{bookstore}$= 5.1; $F_{(1,145)}$ = 180.6, $p<0.001$), for the confirmation of a high concentration situation for affective

evaluation (M_{bar} = 4.1 vs $M_{bookstore}$= 2.5; $F_{(1,135)}$ = 236.9, $p<0.001$) and satisfaction (M_{bar} = 4.3 vs $M_{bookstore}$= 3.1; $F_{(1,135)}$ = 71.6, $p<0.001$), for the confirmation of a low concentration situation for affective evaluation (M_{bar} = 3.9 vs $M_{bookstore}$= 4.7; $F_{(1,141)}$ = 29.1, $p<0.001$) and satisfaction (M_{bar} = 3.2 vs $M_{bookstore}$= 4.4; $F_{(1,141)}$ = 41.8, $p<0.001$) and for a positively disconfirmed situation for affective evaluation (M_{bar} = 5.6 vs $M_{bookstore}$= 2.1; $F_{(1,145)}$ = 804.6, $p<0.001$) and satisfaction (M_{bar} = 5 vs $M_{bookstore}$= 2.8; $F_{(1,145)}$ = 270.1, $p<0.001$). These results show that in a positive disconfirmation as well as in a high confirmation situation, satisfaction and affective evaluation are significantly higher for a leisure situation than a utilitarian one. Moreover, in the case of a negative disconfirmation or a low confirmation situation, satisfaction and affective evaluation are significantly higher for a utilitarian situation than leisure one. This supports hypotheses 7k-7l. An examination of the means indicates that when people were in a situation with a high human concentration (high confirmation or positive disconfirmation) they were really satisfied (average score of 4.6 out 7) in a leisure setting whereas they were dissatisfied in a utilitarian setting (average score of 2.65 out 7). This finding is reversed for low concentration situations and suggests that the service situation strongly moderates the effect of confirmation/disconfirmation by turning dissatisfying situations into satisfying experiences. Moreover, high human concentration situations clearly lead to different outcomes for the consumer depending on the type of service situation. The utilitarian setting results in our research support previous studies where high density was shown to have a negative impact on satisfaction (Eroglu and Machleit, 1990); however, this impact is reversed in the case of leisure service situations.

In addition to these findings, our design allows to test for the potential effect of expectations and to see if the fact of expecting a level of concentration in a given situation might have a different impact on satisfaction compared to the fact of being surprised by the same unexpected level of concentration. Using the results from the individual univariate analyses (table 9) and the figure 9, significant differences in the satisfaction ($F_{(1,287)}$ = 60.5, $p<0.001$) and affective evaluation ($F_{(1,287)}$ = 104.3, $p<0.001$) scores were detected for the leisure setting (bar) between the negatively disconfirmed (M=3.4 for affective evaluation, M=2.8 for satisfaction) situation, the confirmation of a high concentration situation (M=4.1 for affective evaluation, M=4.3 for satisfaction), the confirmation of a low concentration situation (M=3.9 for affective evaluation, M=3.2 for satisfaction) and the positively disconfirmed situation (M=5.6 for affective evaluation, M=5 for satisfaction). Based on post-hoc tests (Tukey's), all the cells had a significant difference with each other at $p<0.0001$ except for the difference in satisfaction between negative disconfirmation (M=2.8) and low confirmation (M=3.2) and in affective evaluation between high confirmation (M=4.1) and low confirmation (M=3.9).

The same analysis was performed in the utilitarian (bookstore) setting. Again, significant differences in the satisfaction ($F_{(1,279)}$ = 157.6, $p<0.001$) and affective evaluation ($F_{(1,279)}$ = 502.6, $p<0.001$) scores were detected for the utilitarian setting (bookstore) between the negatively disconfirmed (M=6.1 for affective evaluation, M=5.1 for satisfaction) situation, the confirmation of a high concentration situation (M=2.5 for affective evaluation, M=3.1 for satisfaction), the confirmation of a low concentration situation (M=4.7 for affective evaluation, M=4.4 for satisfaction) and

the positively disconfirmed situation (M=2.1 for affective evaluation, M=2.8 for satisfaction).

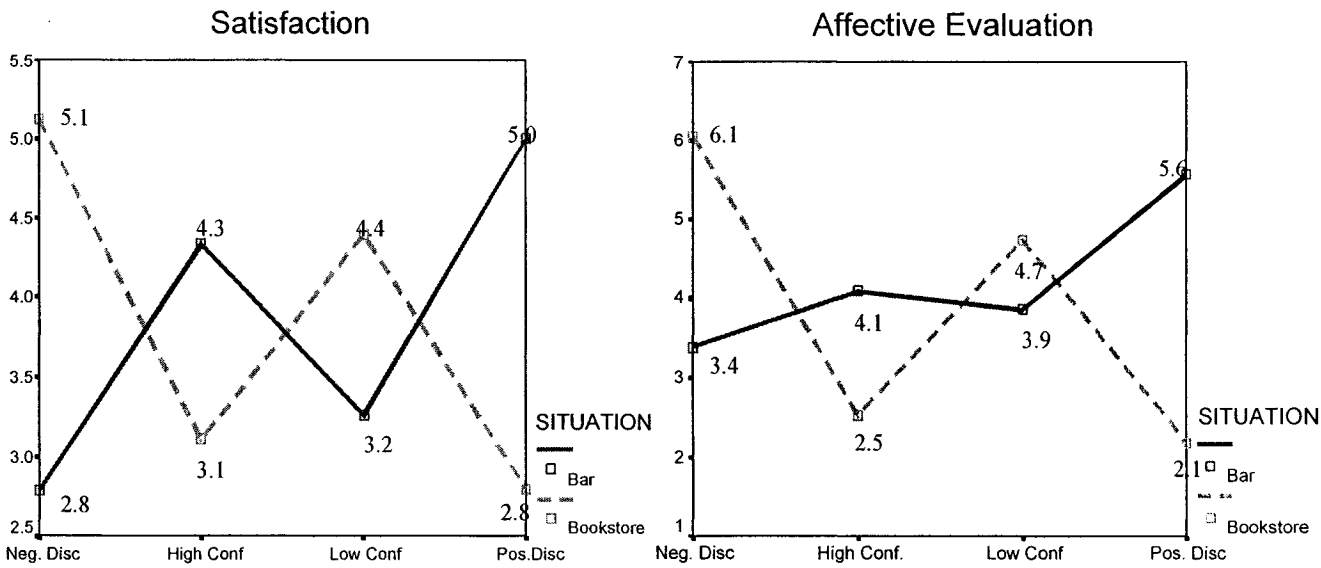


Figure 9. Situation by Confirmation/Disconfirmation Interaction

Based on post-hoc tests (Tukey's), all the cells had a significant difference with each other at $p<0.0001$ except for the difference in satisfaction between positive disconfirmation (M=2.8) and high confirmation (M=3.1).

The non-significant effects are very limited and do not affect the overall nature of the results. Therefore, these results show that in a leisure situation (Bar), satisfaction and affective evaluations are significantly higher for a situation with positive disconfirmation of human concentration than in a confirmation situation (high or low), which in turn is significantly higher than in a negative disconfirmation. On the contrary, in the case of a utilitarian (bookstore) setting, satisfaction and affective evaluations are significantly lower for a situation with positive disconfirmation of

human concentration than in a confirmation situation (high or low), which in turn is significantly lower than in a negative disconfirmation. This finding supports hypotheses 7i-7j.

It is also interesting at this point to pinpoint the effect of expectations in the results. In the bar situation, respondents in high confirmation and positive disconfirmation were both exposed to the same video stimulus (same number of person in the setting). However, they record significant different levels of satisfaction ($M_{Pos\ Disc}$ = 5 vs $M_{High\ Conf}$ = 4.3; $F_{(1,149)}$ = 18.4, $p<0.001$). With the exception of two cases mentioned previously, expectations always make a difference in satisfaction levels reported by consumers who are in identical concentration situations. This supports the appeal made for considering perceptions of human concentration relatively to expectations rather than in an absolute manner. This finding strengthens the important role played by expectations in crowd assessment and in the crowd impact on satisfaction with a service situation.

3.2.2.2 Interaction effect of Situation (A) by Scarcity (C)

The MANOVA results support the presence of an interaction effect for the service situation and the level of scarcity of the service. Significant differences appeared between the leisure setting (bar) and the utilitarian setting (bookstore) for a scarce service situation for affective evaluation (M_{bar} = 4.3 vs $M_{bookstore}$= 3.8; $F_{(1,283)}$ = 6.42, $p<0.05$). In contrast, no difference was detected for a non-scarce service situation. Situational service differences (scarcity in this case) appear to moderate subjects' responses to the service situation. In a scarce service situation, subjects showed significantly more satisfaction with the leisure setting than with the utilitarian setting.

In addition, no difference in satisfaction was revealed between scarce and non-scarce situations for a utilitarian setting. However, subjects in non-scarce and scarce situations primarily differed in their satisfaction with leisure settings (M_{scarce} = 4.05 vs $M_{non\text{-}scarce}$= 3.6; $F_{(1,289)}$ = 5.68, $p<0.05$). These results are also presented in figure 10.

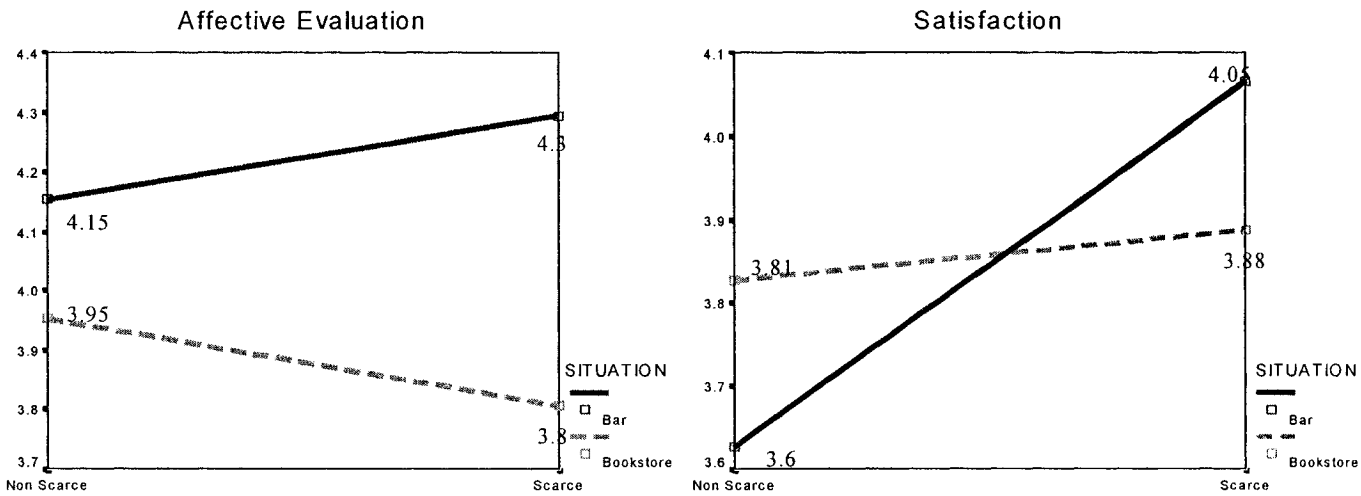


Figure 10. Situation by Scarcity Interaction

These results support hypothesis 8. The lack of established theoretical developments for the scarcity variable and its potential impacts and/or interaction effects with the type of service limit explanations to the social interaction nature of the leisure experience and to the role of this social interaction in the satisfaction gained from the situation. This results open future research avenues but additional theoretical development should be sought to better define the interesting role of scarcity in the service marketing research and explain the underlying mechanisms.

3.2.2.3 Interaction effect of Confirmation/Disconfirmation (B) by Scarcity (C)

In addition to the previous interaction effects, MANOVA results also suggest that there is a significant confirmation/Disconfirmation by scarcity interaction. This interaction is significant only for the satisfaction measure. In fact, as presented in figure11, significant differences were obtained for satisfaction between the scarce and non-scarce situation for the confirmation of a high concentration situation (M_{scarce} = 3.53 vs $M_{non\text{-}scarce}$= 3.9; $F_{(1,135)}$ = 4.41, $p<0.05$), for the confirmation of a low concentration situation (M_{scarce} = 3.45 vs $M_{non\text{-}scarce}$= 4.2; $F_{(1,135)}$ = 16.8, $p<0.001$) and for a positively disconfirmed situation (M_{scarce} = 4.1 vs $M_{non\text{-}scarce}$= 3.7; $F_{(1,135)}$ = 4.4, $p<0.05$). These results show that in a non- scarce situation, satisfaction is higher at each respective confirmation/disconfirmation level. However, for positive disconfirmation (when consumer perceive more people than what was expected), the difference is still significant but reversed. In this case, satisfaction is higher in a scarce service situation with a positive disconfirmation. It seems like the fact of having more people than expected in the setting gives additional value (reinforce the value) to the service encounter for the customer. The scarcity is acknowledged and the unexpected social interactions available in this scarce setting should contribute to build satisfaction up. On the contrary, if the situation has a low human concentration level or if the consumer encounters an expected high concentration, non-scarce situations are more satisfying. An examination of the means indicates however that in most of the situations previously described, consumers were leaning on the positive side of the satisfaction scale (all scores above 3.45).

In addition to these findings, significant differences in the satisfaction ($F_{(1,285)}$ = 5.6, $p<0.001$) score were detected for the scarce situation between the confirmation of

a high concentration situation (M=3.53) and the positively disconfirmed situation (M=4.1) as well as between the confirmation of a low concentration situation (M=3.45) and the positively disconfirmed situation (M=4.1). Based on post-hoc tests (Tukey's), these significant differences are examples of interaction effects limited to positive disconfirmation and scarce situation contexts. These results only partly support hypothesis 9 as the scarce and positively disconfirmed situation is the most satisfying one. However, the difference is only significant with two of the three other situations. Also, the lack of scarcity (the case of a common service situation) does not seem to lead to differences in satisfaction according to the confirmation or disconfirmation state of the human concentration level. Moreover, there were no three-way interaction effects and therefore hypothesis 10 cannot be supported.

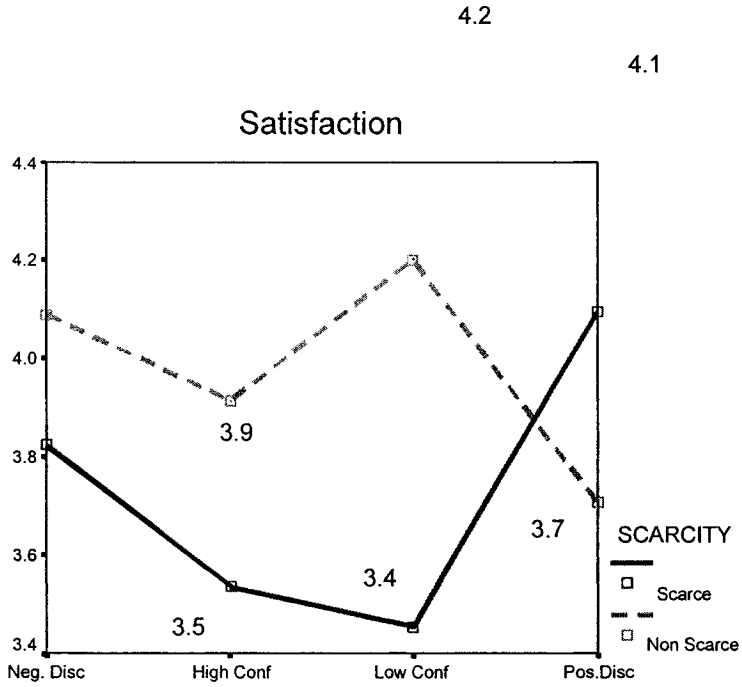


Figure 11. Confirmation/Disconfirmation by Scarcity Interaction

In conclusion, the confirmation/disconfirmation by scarcity interaction effect gave signs that scarcity may be a variable to further consider in service research (limited interaction effects). However, the results are not really conclusive and a fully detailed study should be devoted to the topic and more particularly to a clear conceptual definition of scarcity. The development of a new measurement tool may be appropriate to better capture the real nature of scarcity and its effects.

Results in the last section provide support to several hypotheses of the study. The significant interaction effects highlighted in this context are very interesting and either build on previous finding or even bring new perspectives to the study of situations with diverse human concentration levels and their impact on the consumer's experience. The pattern of results already obtained sheds some light on our hypotheses. However, MANOVA and ANOVA analyses did not allow us to evaluate our hypotheses regarding the structural relationships involved in the human concentration impact on satisfaction. Structural equation modeling should help us to better understand the process that links human concentration and satisfaction and to have a more comprehensive test of the hypothesized structural relationships. These analyses are presented in the next section.

3.3. Structural Equation Models: Evaluation of the human concentration-satisfaction relationships

Through the use of structural equation modeling, the goal of this section is to depict the relationships that tie human concentration and satisfaction and in particularly the valence and strength of these relationships. The model hypothesized in figure 5 is first tested on the overall sample by using the maximum likelihood

method (ML) with EQS software. The goal of this first evaluation is to check if an underlying constant pattern of relationships exists between human concentration and satisfaction. In a second round of analyses, the moderating effect of the situational shopping situation variable (leisure versus utilitarian), the joined effect of the shopping situation and the confirmation/disconfirmation status of the situation as well as the tendency of people to be opened to others (personality trait I-O) are analyzed using multigroup comparative studies. The pattern, the valence and the strength of the relationships at stake are studied and compared for each group. Finally, the results are summarized and discussed.

3.3.1 Preliminary analyses and measurement issues

Prior to the specification of the overall model including causal path relationships, a series of analyses were performed on each of the latent variables used in the model in order to ensure their psychometric properties for further use in the overall model. Expectations and perceptions of human concentration were measured using the scale developed in chapter 4. The creation of "item parcels" based on sums of responses to individual items of the scale, and then employing scores on these parcels in the latent variable analysis was chosen in our analysis particularly to reduce the number of parameter to estimate and reduce any potential future problems related to sample size issues. Although using parcels in evaluating a model rather than individual items may slightly improve the overall fit of the model, the relations among the factors or latent variables should not vary. Thus, the structural parameters should be unaffected by the measurement specification (Takahashi and Nasser, 1996; Kishton, and Widaman,

1994). The parceling is here based on using the sum of items on each individual dimension of the scale and then to use these dimensions as the new indicators in the specified model, giving five indicators for both human concentration expectations and perceptions.

Confirmation/Disconfirmation was assessed using four single-items measures that provide a direct overall assessment of the expectation-perception discrepancy for each dimension considered (privacy, personal space, density and freedom of movement) as suggested in previous studies on satisfaction (Weaver and Brickman, 1974; Oliver, 1997). These four items were indicators of the confirmation/disconfirmation variable.

The affective evaluation was measured after each individual item of the human concentration scale. Therefore, affective evaluation had also 17 items, representing five dimensions. Thus, parceling was used in order to have only five indicators (liking for each dimension).

Satisfaction was measured for the overall service experience using four items (Oliver, 1997; Machleit et al, 2000) and therefore represented as a latent variable with four indicators.

The consumer's prior experience with similar service situations was represented as a latent variable measured through three indicators.

Exploratory factor analyses using principal component on each individual latent variable present in the model specification suggest adequate dimensionalities and satisfying reliability indicators (all above 0.76). Moreover, individual maximum likelihood confirmatory factor analyses were performed on these latent variables. They all have normalized chi-square below 3.85, CFI above 0.95 and RMSEA below

0.07. These results suggested a reasonably good fit to the data and allowed us to start the structural model specification.

3.3.2 General Model

3.3.2.1 Fitting of the model

The model presented in figure 5 was then specified following the measurement issues and results presented previously. In this first analysis, the model was applied to the overall sample (574 respondents), regardless of the manipulations and potential moderators. This approach was used in order to check for overall patterns of relationships and to offer bases of comparisons with theoretical general model presented in the literature (Harrell et al, 1980; Eroglu and Machleit, 1986, Machleit et al, 2000).

Estimation of the model was performed using the EQS software. Different indicators were used to assess the overall fit qualities of the model. Due to $\chi 2$'s sensibility to small sample sizes and distributions (Bollen, 1989; Browne, 1989), modified versions of this indicator have been adopted in this study (Anderson and Gerbing, 1988). The adjusted $\chi 2$ ($\chi 2$/ degree of freedom) represents the first fit indicator (acceptable values should be under 4, Carmines and MC Iver, 1981), the Comparative Fit Index (CFI> 0.90 as a criterion; Hu and Bentler, 1999) is also used as a fit indicator as well as the RMSEA (Root mean square error approximation < 0.07; Browne and Cudeck, 1993).

The hypothesized model produced a Chi-square value of 586.7 with 172 degrees of freedom ($\chi 2$/ df = 3.41). The CFI was 0.968 and the RMSEA was 0.065. All the

standardized loadings on the respective latent factor were above 0.55 and they were significant at $p < 0.001$ (t value > 1.96). This supports the good quality of the measurement part of the model as suggested in previous individual factor analyses for each of the latent factors. Thus, focusing on the results of the structural part of the overall model, the fit indicators further suggest an adequate performance of the specified model. The indicators support the fact that the model fits the data well.

3.3.2.2 Parameter estimates

The EQS standardized estimates of the parameters and their respective t-values are presented in table 10 and figure 12. As shown in the table, all of the structural relationships but one were significant at $p < 0.001$ (tvalue >1.96; Anderson and Gerbing, 1988).

These results support the existence of a complex model linking human concentration in a service setting and satisfaction with the experience. In this model, as suggested by Machleit et al (2000), expectations of a certain human concentration level as well as confirmation/disconfirmation of this expected level have a major contribution on the outcome of the experience for the consumer. Perceptions of a certain level of human concentration only may not fully explain future satisfaction. A closer examination of the estimates shows several interesting results.

	General Model
FIT INDICATORS	
CFI	**0.968**
χ2/Df	586 / 172 = **3.41**
RMSEA	**0.065**
PATH TESTED	**STANDARDIZED ESTIMATE (T-Value)**
Expectations→ Disconfirmation	-.376 (-16.79)
Perceptions→ Disconfirmation	.716 (33.31)
Expectations→ Affective Evaluation	.344 (6.10)
Perceptions→ Affective Evaluation	-.194 (-2.05)
Expectations→ Satisfaction	.100 (2.24)
Perceptions→ Satisfaction	NS
Disconfirmation→ Affective Evaluation	- .667 (-6.21)
Disconfirmation→ Satisfaction	- .199 (-2.42)
Affective Evaluation → Satisfaction	.867 (20.72)
Prior Experience → Expectations	.119 (2.80)
Prior Experience → Perceptions	- .100 (-2.38)

Table 10. Standardized estimates for the human concentration-satisfaction general model

First, our results suggest that prior experiences with the service situation have a moderate negative impact (-.100, t = -2.38) on human concentration perceptions and a positive one on human concentration perceptions (.119, t = 2.80). This result supports hypotheses 12a and 12b. Following Webb and Worchel (1993) and Manis and Paskewitz (1984), this finding may provide support to the fact that prior experience gives a standard of comparison for individuals. Indeed, people with experience of a crowd context have a tendency to alter their expectations or perceptions following an

assimilation-contrast pattern, in which prior experiences assimilate your position toward a moderate positioning regarding concentration. You expect more to reduce potential negative consequences and you perceive less to reduce the strength of a negative stimulus. These explanations perfectly suit a positioning of concentration as a negative feature of the service experience, which is the common position adopted in crowding literature.

Second, human concentration perceptions and expectations contribute respectively positively (.716, t = 33.31) and negatively (-.376, t = -16.79) to confirmation/disconfirmation. This finding supports hypotheses 2(b) and 2(a) and follows guidelines offered by Oliver (1997) in his research on satisfaction, in which the objective disconfirmation (mathematic difference between Perceptions and Expectations) is strongly related to the subjective disconfirmation as measured in our study (four global items).

Third, expectations and perceptions have significant direct and indirect influences (through disconfirmation) on both the affective evaluation of the concentration situation and satisfaction with the overall experience. The only non-significant influence is the direct impact of human concentration perceptions on satisfaction (hypothesis 3c). Once again, these results are in line with studies on satisfaction presented by Oliver (1997). Several studies in the area suggest that satisfaction may be influenced by perceptions only, expectations only, disconfirmation only or a mix of these variables depending on the context of the encounter and moderating variables (Oliver and DeSarbo, 1988; Oliver, 1993). This position and our initial results push for additional analyses and more particularly with the inclusion of potential

moderators and their impacts on the structural shape of the hypothesized model. This inclusion should provide conditions in which consumers favor one route (path) over the other. Nevertheless, these initial findings support hypotheses 3 and 4 (except 3c) for the existence of several potential routes to satisfaction for human concentration.

Fourth, as hypothesized, there is a significant positive influence of affective evaluation of the concentration situation on satisfaction (hypothesis 5). The positive pole of this affective evaluation can be named crowd enjoyment whereas the negative pole represents the crowding situation so often used and described in previous studies. Our findings therefore confirm the over-described negative relationship between crowding and satisfaction (Eroglu and Machleit, 1990, Machleit et al, 2000). The more crowded you feel (negative affective evaluation), the more dissatisfied you are. The classical approach to density and crowding is effectively based on the fact that dense situations (highly concentrated) lead to dysfunctional situations that hinder the individual's experience (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990; Altman, 1975; Baum and Epstein, 1978; Rapoport, 1976). In a retail setting, this negative impact of concentration has often been described (Eroglu and Machleit, 1990; Machleit et al, 2000). A closer look at the values of the standardized estimates seems to support this conclusion.

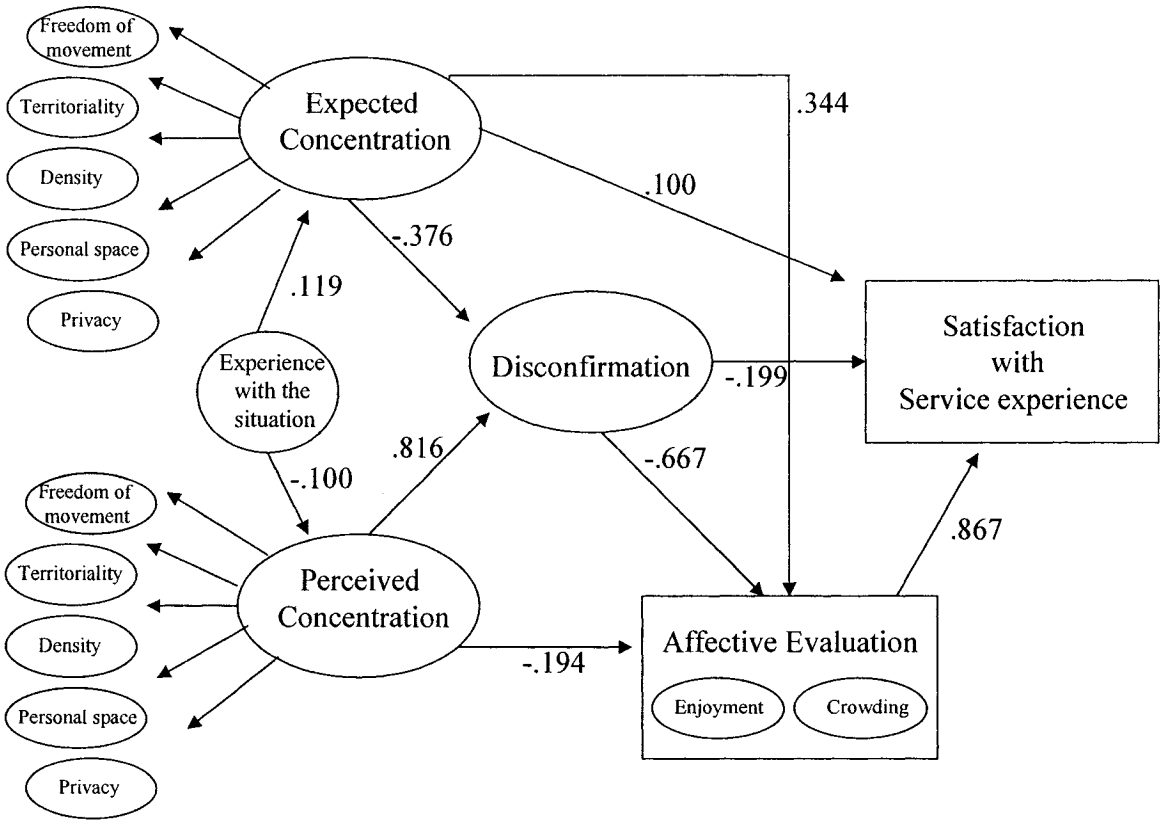


Figure 12. human concentration-satisfaction model (Standardized estimates)

Human concentration perceptions have a direct (-.194, t = - 2.05) and indirect (through confirmation/disconfirmation: -.667, t = -6.21) negative influence on the affective evaluation of the concentration situation. Moreover, human concentration perceptions have an indirect (through confirmation/disconfirmation: -.199, t = -2.42) negative influence on satisfaction. Also, expectations are positively related to both affective evaluation (.344, t = 6.10) and satisfaction (.100, t = 2.24), suggesting under the assimilation position that high human concentration expectations may increase positive outcomes for the consumer as he/she sees concentration as a disturbance and assimilates the concentration level as a preparation to an unpleasant encounter.

However, such results regarding the negative impact of concentration on service outcomes have to be handled carefully. Indeed, several moderators presented earlier in the chapter have shown that high levels of concentration may be associated with positive outcomes. Therefore, structural analyses that incorporate these moderating variables need to be done before any conclusion on the valence of the relationships between human concentration and satisfaction.

3.3.3 Testing the general model for different conditions (moderating effects)

The model tested on the overall sample provided interesting results regarding the pattern and valence of the relationships at stake in the influence of human concentration on satisfaction. In the present section, the equality of the structural pattern of the model across different conditions triggered by potential moderators is tested. Only conditions with formal hypotheses attached are tested hereafter.

3.3.3.1. Comparisons between two service situations (bar versus bookstore)

The first moderating effect evaluated is related to the type of service (leisure versus utilitarian) in which the encounter occurs. It is important to remind at this stage that no main effect of the situation on satisfaction was found in the ANOVA analysis performed earlier. Indeed, there was no reason to be more satisfied in a bar where you go having in mind to relax than in a bookstore where you go having in mind to buy a book. However, if human concentration varies in the two settings, the service situation you are in may then become more influential as suggested by the

significant interaction found between the situation and the confirmation/disconfirmation. In structural models as the one tested here, you can test simultaneously several relationships and also study how a variation in a variable (as human concentration for instance) may impact other variables (as satisfaction for example). Therefore using a multigroup analysis in which respondents in a bar are in the group1 and respondents in the group 2 are in a bookstore, it is possible to understand how variations in human concentration may have different effects on other variables in the model.

3.3.3.1.1. *Measurement equivalence*

The first step in a multigroup analysis is to evaluate measurement equivalence across the two conditions (two samples). It is assessed through the testing of configural and metric invariance (Steenkamp and Baumgartner; 1998). In the former test, no constraints are imposed across the groups. This test assesses whether the same simple structure of factor loadings holds across the two groups. For metric invariance, the factor loadings are constrained equal. Through the comparison of constrained and unconstrained models and using Lagrange Multiplier (LM) statistics, we can determine any potential differences in the way the constructs are formed and interpreted in the two groups (Byrne, 1994; Bollen, 1989).

The test of configural invariance produced a $\chi^2 = 1262.3$ with 340 degrees of freedom ($p < .001$), yielding an adjusted $\chi 2$ (χ^2/df) of 3.71, a CFI of 0.938 and RMSEA of 0.069 suggesting a good fit to the data. Thus, both samples exhibit the same factor and pattern structure.

The second test examined whether the factor loadings were equal for the two groups. The test resulted in a χ^2 of 1439.35 with 360 degrees of freedom ($p < .001$), $\chi^2/df = 3.98$, CFI = .927 and RMSEA = 0.073. Although the fit indices overall indicate a moderately good fitting model, they also show a significant decrease in fit. This decrease suggests a violation of metric invariance. An analysis of LM statistics revealed that five of the equality constraints should be released. The problematic constraints were released in a new model specification. The analysis yielded the following results: $\chi^2 = 1277.1$ with 355 degrees of freedom ($p < .001$), $\chi^2/df = 3.51$, CFI = .938 and RMSEA of 0.069, which represents a significant improvement in model fit compared to the full metric invariance model: χ^2 difference = 162 with 5 degree of freedom, $p < .001$. Thus, only partial metric invariance of the measurement scales used in the model was established (15 factor loadings out of 20). However, full metric invariance is not mandatory for analyses such as mean comparisons or structural invariance. Indeed, it is suggested that, at least one item other than the one fixed at unity, has to be metrically invariant to allow these analyses (Byrne et al, 1989). Following partial metric invariance evidence, structural invariance was evaluated through the same approach.

3.3.3.1.2 *Structural relationships equivalence*

Hypotheses 6a and 6b were tested by fitting a structural model in which all the parameters in the causal structure were constrained to be equal across the two situations (two samples). The fit indicators of the resulting model were a χ^2 of 1891.2 with 351 degrees of freedom, $\chi^2/df = 5.38$, CFI = .886 and RMSEA = 0.090. This

suggests a relatively poor fit to the data. Furthermore, the Lagrange Multiplier (LM) test for releasing constraints indicated that nine constraints (out of 11) should be released, supporting the poor similarity of structural coefficients between the two groups. The only identical path across the two groups is the non-significant effect of disconfirmation on satisfaction and the negative impact of prior experience on human concentration perceptions. Once the nine non-pertinent constrained were deleted, the model was reevaluated. The final indicators are a χ^2 of 1264.343 with 342 degrees of freedom, $\chi^2/df = 3.68$, CFI = .938 and RMSEA = 0.069. These results suggest a fairly good fit to the data. The parameter estimates are presented in table 11.

A closer analysis of the previous results yields to major findings. First, the poor quality of the overall fit indicators of the constrained model supports the non-equivalence of parameter estimates for the two situations. In fact, the configural equivalence tested earlier showed that loadings and paths are identical in the two samples but the latest test stressed out the fact that the existing relationships are different from one group to the other. Second, few parameter estimates vary in terms of the strength of the relationship. Indeed, some relationships are significantly stronger in group 2 (bookstore situation) than in group 1 (bar situation). It is the case for the influence of perceptions on disconfirmation for example (.865 versus .716).

	Bar	Bookstore
PATH TESTED	**STANDARDIZED ESTIMATE (T-Value)**	**STANDARDIZED ESTIMATE (T-Value)**
Expectations→ Confirmation/Disconfirmation	-.516 (-15.79)	-.262 (-9.9)
Perceptions→ Confirmation/Disconfirmation	.736 (20.21)	.865 (27.1)
Expectations→ Affective Evaluation	-.500 (6.10)	.100 (2.5)
Perceptions→ Affective Evaluation	.760 (8.1)	-.661 (-8.9)
Expectations→ Satisfaction	-.100 (2.3)	.100 (2.7)
Perceptions→ Satisfaction	.367 (5.1)	-.456 (-4.01)
Confirmation/Disconfirmation→ Affective Evaluation	.439 (3.3)	-.290 (-3.7)
Confirmation/Disconfirmation→ Satisfaction	NS	NS
Affective Evaluation → Satisfaction	.455 (7.2)	.497 (4.7)
Prior Experience → Expectations	NS	.205 (3.4)
Prior Experience → Perceptions	- .093 (-2.3)	- .105 (-2.3)

Table 11. Standardized estimates for the human concentration-satisfaction model in the bar and bookstore situations

The result is reversed for expectations (- .262 versus -.516). However, these results have no major implication. The major results in this study lies in the fact that all the relationships pertaining to satisfaction or affective evaluation have opposite valence in the two situations. Indeed, in the bookstore situation human concentration perceptions have either a direct or indirect negative influence on affective evaluation and satisfaction whereas in the bar situation human concentration perceptions have either a direct or indirect positive influence on affective evaluation and satisfaction. These results support hypotheses 6a and 6b and bring an essential support to the theoretical claim that high human concentration may also lead to positive outcomes

for the consumer. It actually shows that in specific conditions (here a leisure situation: bar) crowd and concentration can contribute positively to the experience. Few mentions of this potential positive influence of a crowd in a service experience have been done in the literature (Price et al, 1995; Holt, 1995; Wann et al, 2000) but it is one of the first empirical results that brings support to this position and that goes again the traditional positioning of crowding studies within the realm of negative consequences (Eroglu and Machleit, 1990; Machleit et al, 2000). It does not mean that previous results are not to be considered. It simply underlines the importance of contextual considerations when one studies crowd and density' impacts for the consumer.

3.3.3.2 Comparisons between positive disconfirmation, confirmation and negative disconfirmation of human concentration

If the service situation appears to strongly moderate the relationship between human concentration and satisfaction, the literature suggests that confirmation or disconfirmation of concentration conditions may also play a moderating role on this relationship (Machleit et al, 2000; Webb and Worchel, 1993). Therefore, the effects of disconfirmation (positive or negative) and confirmation are studied in this section. Within each situation (bar and bookstore), three groups or subsamples (positive disconfirmation, negative disconfirmation and confirmation) were created. The limited sample size of the four disconfirmation groups (2 in the bar and 2 in the bookstore for approximatively 75 respondents each) may cause convergence problems or falsely conclude that a model is not identified (Rigdon, 1994). The

analysis was performed anyway due to the novelty and exploratory nature of studying confirmation/disconfirmation impacts on paths linking human concentration and satisfaction. The interest of this analysis was to highlight any potential difference between the disconfirmation situations in the way that human concentration influences satisfaction. In other words, within a service situation (bar or bookstore respectively), are the structural relationships equivalent across various disconfirmation conditions?

3.3.3.2.1 *Measurement equivalence*

Once again, the first step was to evaluate the measurement equivalence across the three disconfirmation conditions within a service situation.

The test of configural invariance in the bar situation produced a $\chi^2 = 1533.5$ with 510 degrees of freedom, yielding an adjusted $\chi 2$ (χ^2/df) of 3.01, a CFI of 0.919 and RMSEA of 0.079 suggesting a good fit to the data. Thus, the three subsamples in the bar situation exhibit the same factor and pattern structure. The test of configural invariance in the bookstore situation showed fairly acceptable fit proprieties with a $\chi^2 = 1833.4$ with 510 degrees of freedom, yielding an adjusted $\chi 2$ (χ^2/df) of 3.59, a CFI of 0.901 and RMSEA of 0.087. Once again, the three groups in the bookstore situation also exhibit a similar factor and pattern structure.

With the factor loadings set to be equal across the three groups in the bar (bookstore) situation, a new model was evaluated. This test resulted in a χ^2 of 1628 (2003 in bookstore) with 561 degrees of freedom, χ^2/df = 2.90 (3.57 in bookstore), CFI = .85 and RMSEA = 0.083 (0.090 in bookstore). The fit indicators suggest a

slightly non-fitting model with a significant decrease in the fit compared with the non-constrained model. This decrease supports a slight violation of metric invariance. An analysis of LM statistics revealed that 9 (14 in the bookstore condition) of the equality constraints should be released. The problematic constraints were released in a new model specification. The analysis yielded the following results: χ^2 = 1572 (1857 in the bookstore condition) with 552 (547 in the bookstore situation) degrees of freedom, χ^2/df = 2.84 (3.39 in the bookstore situation), CFI = .923 (.901 in the bookstore) and RMSEA of 0.077 (0.09 in the bookstore), which represents a significant improvement in model fit compared to the full metric invariance model: χ^2 difference = 56.6 (143 in the bookstore) with 9 (14 in the bookstore) degrees of freedom, $p < 0.001$. Thus, only partial metric invariance of the measurement scales used in the model was established. However, full metric invariance is not mandatory for analyses such as mean comparisons or structural invariance (Byrne et al, 1989). Therefore, following partial metric invariance evidence, structural invariance was then evaluated.

3.3.3.2.2 *Structural relationships equivalence in the bar situation*

All the structural relationships were set to be equal in the bar condition across confirmation/disconfirmation conditions (3 samples). The fit indicators of the resulting model were a χ^2 of 1616.3 with 533 degrees of freedom, χ^2/df = 3.03, CFI = .902 and RMSEA = 0.084. This suggests a relatively acceptable fit to the data. Furthermore, the Lagrange Multiplier (LM) test for releasing constraints indicated that five constraints (out of 33) should be released. Once these constraints were

released, the model was reevaluated. The final indicators are a χ^2 of 1559.1 with 528 degrees of freedom, χ^2/df = 2.95, CFI = .925 and RMSEA = 0.083. These results suggest a fairly good fit to the data. The parameter estimates are presented in figure 13. A closer analysis of the previous results in the bar setting yields to interesting findings.

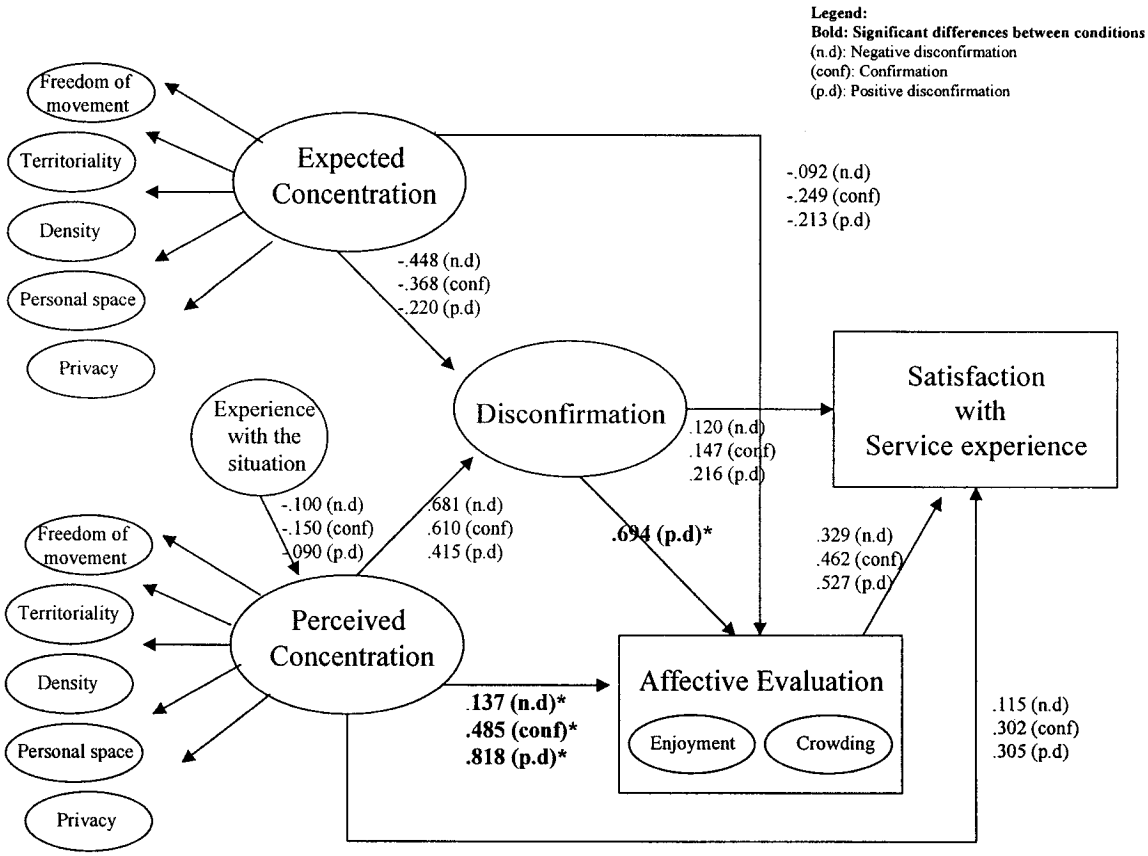


Figure 13. Human concentration-satisfaction model in the bar situation (Standardized estimates) for different confirmation/disconfirmation conditions

First, whatever the confirmation/disconfirmation condition the respondent is in, we find the same valence of relationships than in the overall bar situation.

Second, only seven equality constraints had to be released suggesting that there are only seven significant differences between paths across at least two conditions. The most pertinent finding pertains to the influence of human concentration (directly through perception or indirectly through disconfirmation) on the affective evaluation. Indeed, in a positive disconfirmation situation (people perceive more concentration than expected), the influence of human concentration is significantly higher than in the two other conditions. Moreover, in the confirmation condition, the influence of human concentration on the affective evaluation is significantly higher than in the negative disconfirmation condition (people perceive a smaller concentration than expected) (nd: .137; conf: .485 and pd: .818). These results support hypotheses 7a and 7b. The same hypotheses regarding the direct influence on satisfaction (7e and 7f) receive a limited support. If the valence and values of coefficients follow the same pattern, the differences between the conditions are not significantly different. However, this first set of results in the bar section clearly shows that the confirmation/disconfirmation of human expectations moderate the relationship between human concentration and satisfaction. Following Oliver (1997), the positive disconfirmation situation can be thought as a delight situation in which the surprisingness of the outcome (more people than expected) contributes greatly to the overall satisfaction. This is also supported in the model results by the strong existing disconfirmation effect on the affective evaluation and the active roles of expectations and perceptions. These characteristics are described as essential elements in the

satisfaction-as-delight process described by Oliver (1997). Similarly, the confirmation of human concentration (associated in this leisure situation as a positive attribute) can be seen as a situation in which there is a *satisfaction-as-pleasure* process. As described by Oliver (1997), in the case of a confirmation of a pleasure state, disconfirmation effects are reduced or even absent as attribution does not occur but expectations and perceptions are active. This result is confirmed in our model by the lack of effect of disconfirmation on affective evaluation.

3.3.3.2.3 *Structural relationships equivalence in the bookstore situation*

All the structural relationships were set to be equal in the bar condition across confirmation/disconfirmation conditions (3 samples).

The fit indicators of the resulting model were a χ^2 of 1937.2 with 533 degrees of freedom, χ^2/df = 3.63, CFI = .87 and RMSEA = 0.090.This suggests a relatively average fit to the data. Lagrange Multiplier tests indicated that seven constraints (out of 33) should be released. Once these constraints released, the model was re-evaluated. The final indicators are a χ^2 of 1559.1 with 526 degrees of freedom, χ^2/df = 2.95, CFI = .925 and RMSEA = 0.083. These results suggest a fairly acceptable fit to the data. The parameter estimates are presented in figure 14.

Regarding the strengths and the valence of the relationships in the model, the first results show that, regardless to the confirmation/disconfirmation condition, there is an overall negative influence of human concentration on satisfaction. However, the differences in intensity hypothesized for the confirmation/disconfirmation conditions are not fully verified. Indeed, there are no significant differences between the three

conditions in the influence of disconfirmation and perceived concentration on affective evaluation even if the pattern is in the expected direction. Therefore, hypotheses 7c and 7d are not supported. However, the influences of disconfirmation and perceived human concentration directly on satisfaction are significant and very similar to the hypothesized ones. Human concentration perceptions influence significantly more negatively (-.818 versus -.302) satisfaction in a positive disconfirmation case than in a confirmation situation. Similarly, disconfirmation influences significantly negatively (-.628) satisfaction in a positive disconfirmation situation whereas it has no influence in a confirmation one. These results support hypothesis 7g.

If human concentration's influence on satisfaction is not less negative in the case of a negative disconfirmation than in the case of a confirmed situation (hypothesis 7h not supported), it is however important to notice that this influence is always significantly less negative in the case of a negative disconfirmation situation than in a positive disconfirmation one. Positive disconfirmation seems to be the most negative condition regarding crowd influence in a utilitarian setting. Also the lack of significance of a disconfirmation path on satisfaction is in line with previous findings in satisfaction research on the absence of disconfirmation effects when performance (perceptions) is confirmed (Oliver, 1997). The reduced negative effects of concentration in a utilitarian setting in a negative disconfirmation situation can be interpreted as a satisfaction-as-relied process with the reduction of negative component of a product (service)'s attribute (crowd in our case).

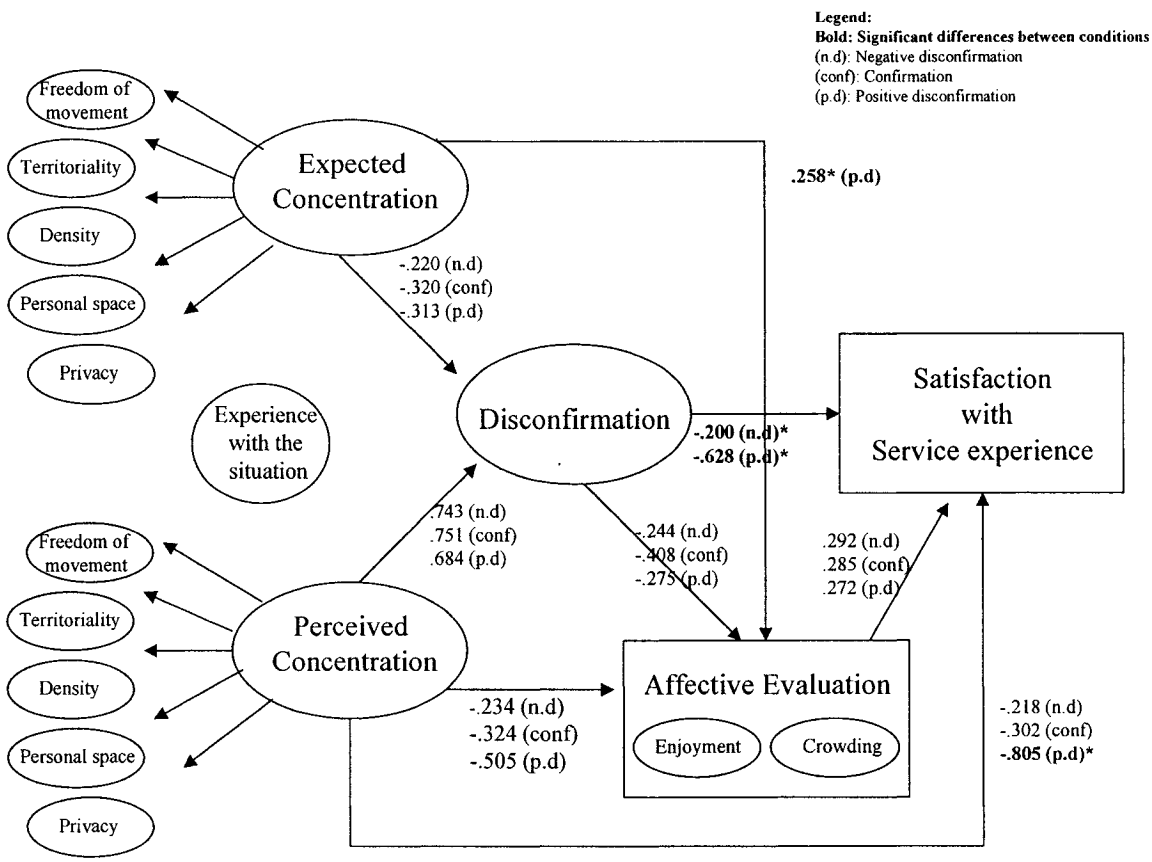


Figure 14. Human concentration-satisfaction model in the bookstore situation (Standardized estimates) for different confirmation/disconfirmation conditions

3.3.3.3 Comparisons between two social character types: Inner-directed versus Other-directed

3.3.3.3.1 *Preliminary Analysis*

Using Kassarjian's scale (1974), 6 items measured the Inner-Other orientation of our respondents. Alpha Cronbach performed on the items suggested to remove one of the items. The remaining items had an Alpha (0.84) well above Nunnally's threshold

(1978). A principal component factor analysis showed a unidimensional structure explaining 74% of the variance. An average score using these five items was calculated and used to represent the self-centered degree of respondents. As this variable was not manipulated in the study, a short analysis was performed to evaluate how the data regarding this variable were distributed. The plot is presented in figure 15 hereafter. The median score is 2.5. Even if the distribution presents a slight asymmetry of the data suggesting that more data points are in the low part of the score (more people oriented toward others), which is fairly consistent with the nature of the sample (students), a sufficient number of subjects are above the mid-point of the scale. It was therefore decided to split the sample in two with individuals having a score lower than 3 to form the Other-directed group whereas individuals with a score above 4 formed the inner-directed group. The final samples have respectively 238 and 165 respondents.

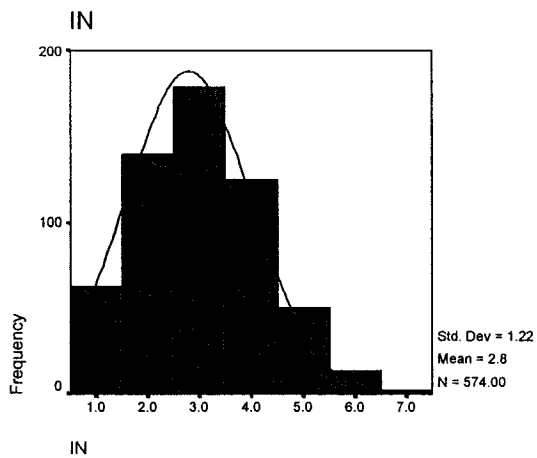


Figure 15. Frequency with normality plot of the In variable

3.3.3.3.2 *Measurement equivalence*

The test of configural invariance produced a $\chi^2 = 1167.1$ with 340 degrees of freedom ($p < .001$), yielding an adjusted $\chi 2$ (χ^2/df) of 3.43, a CFI of 0.909 and RMSEA of 0.079 suggesting a good fit to the data. Thus, both samples exhibit the same factor and pattern structure.

The second test examined whether or not the factor loadings were equal for the two groups. The test resulted in a χ^2 of 1250.1 with 357 degrees of freedom ($p < .001$), $\chi^2/df = 3.50$, CFI = .901 and RMSEA = 0.078. Although the fit indices overall indicate a moderately good fitting model, they also show a significant decrease in fit. This decrease suggests a violation of metric invariance. An analysis of LM statistics revealed that only two of the equality constraints should be released. The problematic constraints were released in a new model specification. The analysis yielded the following results: $\chi^2 = 1186.1$ with 355 degrees of freedom ($p < .001$), $\chi^2/df = 3.34$, CFI = .908 and RMSEA of 0.071, which represents a significant improvement in model fit compared to the full metric invariance model: χ^2 difference = 64 with 2 degree of freedom, $p < .001$. Thus, as at least one item other than the one fixed at unity, was metrically invariant, our structural analyses were performed (Byrne et al, 1989).

3.3.3.3.3 *Structural relationships equivalence*

Hypotheses 11a and 11b were tested by fitting a structural model in which all the parameters in the causal structure were constrained to be equal across the two groups. The fit indicators of the resulting model were a χ^2 of 1173 with 351 degrees of

freedom, χ^2/df = 3.34, CFI = .91 and RMSEA = 0.078. This suggests a relatively good fit to the data. Furthermore, the Lagrange Multiplier (LM) test for releasing constraints indicated that no constraints should be released, suggesting a full invariance of path estimates across the two groups. These results suggest that there are no differences in the path relationships between inner-directed versus other-directed individuals. The parameter estimates are presented in table 12. Therefore, we can conclude that hypotheses 11a and 11 b are not supported.

	Inner-Oriented	Other-Oriented
PATH TESTED	**STANDARDIZED ESTIMATE (T-Value)**	**STANDARDIZED ESTIMATE (T-Value)**
Expectations→ Confirmation/Disconfirmation	-.369 (-5.79)	-.413 (-6.2)
Perceptions→ Confirmation/Disconfirmation	.818 (27.21)	.794 (20.1)
Expectations→ Affective Evaluation	.391 (6.10)	.298 (5.3)
Perceptions→ Affective Evaluation	-.165 (-2.1)	-.159 (-2.0)
Expectations→ Satisfaction	.206 (2.3)	.211 (2.5)
Perceptions→ Satisfaction	NS	NS
Confirmation/Disconfirmation→ Affective Evaluation	-.660 (15.3)	-.605 (-14.7)
Confirmation/Disconfirmation→ Satisfaction	-.404 (-7.2)	-.376 (-6.5)
Affective Evaluation → Satisfaction	.835 (27.2)	.880 (28.7)
Prior Experience → Expectations	NS	NS
Prior Experience → Perceptions	- .172 (-2.2)	- .182 (-2.1)

Table 12. Standardized estimates for the human concentration-satisfaction model in the inner and other-oriented groups

CHAPTER VI

CONCLUSION & IMPLICATIONS

The presence of other customers in the service factory has turned the typical service consumption experience in encounters where, in many situations, our evaluation of the service is partly or totally based on the interactions we have with non-service providers. The services marketing literature gives many examples of these co-consumers that may either have a good (Price et al, 1995; Holt, 1995) or a bad (Grove and Fisk, 1997; Eroglu and Machleit, 1990; Edvardsson, 1992) impact on others' experience. Most of these encounters or interactions were studied at the individual level through critical incidents technique. The group (crowd) influences have surprisingly been studied in a limited manner within services and most of the time, to show the negative impact of having too many people in a commercial setting (Eroglu and Harrell, 1986; Eroglu and Machleit, 1990). However, with the actual development and popularity of experiential and hedonistic services as well as growing concerns in leisure research about crowd management (Stewart and Cole, 2001; Manning and Valliere, 2001), the role of the crowd in services needs a more careful and detailed attention. Through the integration of the services marketing literature on crowding and sociology or psychology related research, this work aims at reducing the different gaps identified and at better defining what a crowd means in

a business sense and what are its implications for the consumers. How do they react to very busy, compared to quiet, settings? What are the processes or mechanisms involved? Following the results previously described, this study proposes several potential implications.

1. *Theoretical implications and future research*

The main theoretical contributions lie in the definition and clarification of crowd related concepts. Indeed, even if perceived density (neutral estimation of the number of people in a setting) is considered as a central variable in the way consumers process dense contexts, services marketing literature does not take into account the psychological nature of this concept and acknowledges its importance. Instead, researchers focus on the concept of crowding that they, and other in sociology, define as a negative affective evaluation. The development of crowding measures and their positioning as key variables in the dense situation evaluations logically lead to a recurrent negative influence of dense environment on satisfaction in services, crowding being loaded with negative connotations. This research switches the focus in crowd research and repositions perceived density (called human concentration in this study to avoid confusion as density is inappropriately used in several studies) as the central concept in crowd processing and also provides a detailed conceptualization of the way consumers deal with dense situations.

In the first part of this research, proposition regarding the nature and manifestations of human concentration are presented. The development of a valid multidimensional measurement scale that includes social and psychological

dimensions demonstrates the depth of this concept and highlights the complexity of human concentration. More specifically, the emergence of different facets of concentration such as personal space, privacy, freedom of movement or perceived density offers a more complete picture of what human concentration is and how it influences individuals' behaviors and reactions. These sub-dimensions support the idea that density is not only a question of objective number of people and square footage but rather a more percetual concept. These different manifestations of concentration should allow researchers to study more detailed aspects of human concentration impacts and to try to identify specific influences from each of these subdimensions rather than only focusing on the more generic concentration itself. Moreover, the privacy dimension of concentration offers interesting new perspectives on a theoretical standpoint. Indeed, based on empirical results in this study regarding privacy, it seems that they may be more than one type of privacy or manifestation of it, based on the fact that you can either voluntarily withdraw from the situation or that others may interfere with your privacy. This result calls for additional research on privacy issues in services and is in line with previous conceptualization of privacy that were overlooked for many years (Westin, 1970; Bates, 1964). Finally, the inability to capture, in a commercial setting, the territorial component presented in the environmental psychology literature (Altman, 1975; Baum and Epstein, 1978) is also an important finding. It appears that it may be difficult to transpose findings in social settings, which strongly define the individual (house, jail...), to studies with more anonymous service settings. The lack of representation of territoriality in our results suggests that more scrutiny should be devoted to this potential sub-dimension to

check if its significance in concentration assessment is context-dependent and what meanings are lost or gained depending on its inclusion in future human concentration measurement.

In the second part of this research, the study of the potential impact of perceived human concentration in service situations on consumers' reactions and how these reactions are triggered offers several important theoretical developments. The main contribution of this study lies in the fact that, under certain conditions, perceived human concentration may trigger a positive satisfaction for the consumer, even in highly concentrated contexts. This is the first empirical study that also shows and demonstrates the potential positive side of concentration in service settings. Several results in this section offer additional and interesting developments.

For instance, in the services marketing literature the role given to expectations in a crowd situation assessment is very limited in previous services marketing studies. On the other hand, most of the researchers in sociology and social psychology acknowledge the central role played by the expectations in a crowd assessment (Webb and Worchel, 1993). Following this model, this research integrates the role and the importance of expectations in the way a consumer deals with a crowd. As a result, significant interactions between the service situation at stake and the level of confirmation/disconfirmation of human concentration suggest that the most satisfying situation is in the leisure situation with unexpected high levels of concentration. This result suggests the important role played by the surprise effect in building value for the consumer in a leisure setting...especially when the surprise has a positive valence such as increased concentration has in a bar setting where it contributes to building a

pleasant and fun athmosphere. The reversed surprise effect, with a very small unexpected concentration in a utilitarian service situation also brings satisfaction but to a lesser extent. These results once again give insights on the role of confirmation/disconfirmation of concentration levels in service situations and suggest that expectations, in addition to only observations, may also be manipulated by service managers in order to influence customers' reaction within a service experience.

The significant role played by scarcity in the evaluation of human concentration effect on consumers'response is also a very novel and interesting finding. Indeed, the scarcity level of a service experience has significant impact on consumers'satisfaction with a service in a leisure setting whereas there is no difference in a utilitarian service situation. This finding supports the particular role played by service scarcity in service satisfaction assessment. The added value of scarce events in fun, social service situations offers interesting research avenues for an understudied topic usually limited to economic studies. The introduction and importance of the scarcity concept in crowd studies is another theoretical contribution of this study. In addition to the changes in satisfaction levels due to independent variables such as confirmation/disconfirmation, scarcity or service situations, the second part of the study also identifies and describes the process through which human concentration impacts consumers' reactions and satisfaction more particularly.

Using early developments on density impacts in service situations (Harrell et al, 1980; Eroglu and Machleit, 1986) and including developments from the satisfaction literature (Oliver, 1993), this study proposes an integrated human concentration-

satisfaction relationship model. This model proposes alternate routes between human concentration and satisfaction/dissatisfaction and offers interesting contributions. First, the confirmation/disconfirmation variable plays a major role in consumers' reactions. This reinforces the importance of expectations and not only perceptions in forming satisfaction. Second, expectations also have a direct impact on satisfaction and therefore play therefore a critical role in satisfaction judgments. If the general model supports the traditional negative relationship between human concentration and satisfaction, the introduction of several moderators into the tested model give a better understanding of the process involved. For instance, in leisure situations, the negative relationship between human concentration and satisfaction is reversed and becomes positive. This relationship is even stronger if the high human concentration is unexpected (positive disconfirmation). These results offer a clearer picture of the human concentration-satisfaction relationship and explain how a traditionnaly negative relationship may turn into a positive experience.

Overall, this work offers strong theoretical contributions by redefining the nature of concepts at the heart of the crowd impact issues (concentration and crowding). It also identifies and describes processes at stake in the human concentration-satisfaction relationship. It broadens the restrictive perspective given to human concentration in this relationship and offers alternate views of its role. Finally, it gives insight about several moderators such as confirmation/disconfirmation or service situations that contribute to alter and even reverse the nature of the relationship.

2. *Limitations*

Despite a carefully developed research framework and methodology, it is important to notice a few potential limitations to our study.

First, even though the video-stimuli and the pen-and-pencil methods used in this research have been found to be very effective and to offer valid and reliable results to study crowd encounters (Machleit et al, 2000; Hui and Bateson, 1991), other studies in environmental psychology and sociology call for the inclusion of more qualitative observation and real-setting situations to study crowd-related issues (Baum and Epstein, 1978; Jain, 1987). Therefore, one of the limitations of the study is related to the mono-method approach used in this study. An additional qualitative study (observation and/or in-depth interview) would allow us to get richer information particularly at the crowd process level and to help clarify for example specific mechanisms such as when is the process driven by disconfirmation or by perception only? How important are some moderating variables versus some others? The additional method would better qualify our results and add to the existing patterns previously highlighted.

Second, several potential moderating variables (service situation, confirmation/disconfirmation, scarcity of the service) were presented in this study. However, as underscored in the theoretical part of the research, this list is not comprehensive and their number was limited to remain within the limits of feasibility (experimental design). Several other variables may have been added in order to have a more extensive understanding of human concentration processing. In particular, variables such as the perceived similarity between the respondent and crowd

members or the attribution of the gathering or the perceived control of the respondent over the situation (Hui and Bateson, 1991) were of particular interest but were not included in our study. Future research should focus on including these variables in the crowd equation and aim at an even clearer picture of the role of a crowd in a service situation.

3. *Managerial Implications*

From a managerial standpoint, this research contributes to a better understanding of the way a crowd should be managed or even how a crowd can be useful and under what conditions.

The multidimensionality of the human concentration scale gives insight to managers on the different aspects (e.g. privacy, freedom of movement...) that they may have to consider when designing or organizing their business (e.g. waiters, visit hours...). For instance, leisure research calls for a better understanding of crowd and crowd management issues to solve problems of over-capacity in places such as attraction or national parks (Stewart and Cole, 2001). By satisfying some of the dimensions of perceived human concentration, managers may be able to reduce the feeling of high concentration.

Moreover, they may want to create and use feelings of high concentration if they find themselves in a situation where people love it The identification of some of these moderating variables (e.g. situational, interpersonal) that can moderate the impact of highly dense environments and make the consumer's experience more enjoyable and satisfying is very useful for practitioners. In conclusion, they can understand that too

many is not always bad and that one can control specific key aspects to use this overcapacity to their advantage.

APPENDIX I

Appendix 1- Scale Development: Expert Opinion.

Dear Expert,

My name is Frank Pons and I am a PhD candidate in Administration. I am currently working for my dissertation on **the impact of a crowd on service satisfaction for a consumer**.

In part of this research, I am trying to measure specific components of crowded environments and I intend to capture these aspects by asking pen and paper types of questions.

At this point, I request your expertise and help in order to develop a pool of items that would capture these components. You have been chosen for your knowledge, familiarity and experience with one or more of the following fields: Marketing, Services, Consumer Behaviour, Psychology, Sociology. Your feedback is very important for the success of my research.

For each concept that I attempt to measure, I will give you a definition and few items as a sample. I would then ask you to add as many items as you can think of and which could capture (according to you) the previously defined concept. Do not restrict yourself and be imaginative but I do ask you to try avoiding affective evaluation types of items (such as I like).

I would really appreciate if you could fill this questionnaire and return them through internal mail (Frank Pons- Marketing Department) or call me for pick-up at 572-8070. Thanks very much in advance,
Sincerely,

Frank Pons
PhD student.

First Concept: **PRIVACY IN A CROWD**

Definition (Westin, 1970; Pastalan, 1972): *The right of the individual to decide what information about himself should be communicated to others and under what conditions*, also defined as a *selective control of access to the self which is formed by solitude, intimacy, anonymity.*

Examples: (the _____ represents the service context such as a restaurant)

I wouldn't be noticed in this crowd.*
This _____ is very intimate.
Anybody in this _____ can have personal moments without being disturbed.
I can easily give a personal phone call on my cellular phone in this_____.
This_____ respects my privacy.
In this_____, I can act freely.
Nobody will bother me in this _____.
I will have time for myself in this _____.
Everybody in this _____ looks interested in what others are doing.
In this_____, everybody sees what I am doing.
Nobody will talk to me in this _____if I do not want to.
I can spend some time by myself, doing what I want, in this _____.
I can cry or shout in this _____ and nobody will ask me anything.
In this_____, I could clearly hear the conversations of others.
I felt that I was intruding on the privacy of others in this _____.
I felt that others were intruding on my privacy in this _____.
In this _____, people were observing me.
People were staring at me in this _____.
In this _____, everyone keeps to himself/herself.
I can get time to myself in this _____.
In this _____, I can decide whether or not to talk to someone.
I am myself in this _____.
In this _____, I cannot speak freely to my friends.

* All items will be filled using a 7-point Likert scale (1-Totally disagree with the statement and 7-Totally Agree with the statement)

Please propose some items to measure this concept of Privacy:

_____

_____

_____

_____

_____

_____

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_____

Second Concept: PERSONAL SPACE IN A CROWD.

Definition (Goffman, 1971; Altman, 1975): An *invisible boundary or separation between self and others. The personal space is literally attached to the self* and *carried everywhere.*

Examples: (the _____ represents the service context such as a restaurant)

In this _____, people would consistently touch me.*
People are very close to me in this_____.
I have literally no personal space in this _____.
In this_____, I can stay in my own "bubble" and avoid others' contact.
In this _____, people behave in such a way that everybody can have his own personal space.
In this _____, people are right on top of you.
In this _____, there is enough space to easily stretch my arms and my legs.
People invade my space in this _____.
People are "in my face" in this _____.
Others intrude my personal space in this _____.

* All items will be filled using a 7-point Likert scale (1-Totally disagree with the statement and 7-Totally Agree with the statement)

Please propose some items to measure this concept of Personal Space:

Third Concept: TERRITORIALITY IN A CROWD.

Definition (Sommer and De War, 1963): The territory represents an *invisible boundary or separation between self and others* but it should be differentiated from the personal space by the *fixed, geographic, immobile nature of the region considered (in the case of a service, it might be for instance the physical room where the restaurant is). Territoriality reflects the desire of an individual to possess or occupy portions of this territory.*

Examples: (the _____ represents the service context such as a restaurant)

Despite the people in this _____, I consider this place as my _____.*
In this, I am literally in an unknown territory.
New customers arriving in this _____ would be unwelcomed.
In this _____, I feel like home.
I can stand wherever I want in this _____.
I wouldn't change my habits in this_____ because of other people.
In this_____, I can easily stake out the best spot for myself.
I can have my own spot in this _____.

* All items will be filled using a 7-point Likert scale (1-Totally disagree with the statement and 7-Totally Agree with the statement)

Please propose some items to measure this concept of Territoriality:

Fourth Concept: DENSITY IN A CROWD.

Definition (Altman, 1975; Day and Day, 1970), in a general sense, *the number of people per unit of space also the number of people in a closed space.*

Examples: (the _____ represents the service context such as a restaurant)

There are a lot of people in this _____.*
This place is crowded.
The _____ is small for the number of people _____.
This place is jammed.
I am surrounded by people in this _____.
This place is virtually empty.
This place is "dead".
This _____ is packed.
This service is thick with people.
There is a high number of people in this_____.

* All items will be filled using a 7-point Likert scale (1-Totally disagree with the statement and 7-Totally Agree with the statement)

Please propose some items to measure this concept of Density:

_____

_____

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Fifth Concept: FREEDOM OF MOVEMENT.

Definition: (Kelvin, 1973; Wicker et al, 1973), This is related to the freedom of choice applied in a crowded setting, it represents *the ability to go or access to any parts of the physical setting, if desired by the individual*

Examples: (the _____ represents the service context such as a restaurant)

I could easily walk through this_____.*
I could easily leave this _____.
I would not have to follow other people to leave this _____.
I ca not move an inch in this _____.
It is difficult to move freely in this _____.
I have to squeeze past others in this _____.
It is very difficult to access the bathrooms in this_____.
I could move about freely in this_____.
It is difficult to make my way through the crowd in this _____.
I can leave this place quickly if needed.
It is easy to roam around in this_____.
In case of emergency, people are able to get out of this _____ quickly enough.

* All items will be filled using a 7-point Likert scale (1-Totally disagree with the statement and 7-Totally Agree with the statement)

Please propose some items to measure this concept of Density:

_____

APPENDIX II

In this study, we are interested in your perceptions of leisure environments.

The information we collect for this study will only be used for academic purposes and your response will be anonymous (i.e. your name and/or identifying information will not be published in any manner). We hope that participating in this survey will be interesting!

Thanks for your help,

Frank Pons
Concordia University

Please Wait Instructions before turning the page.

1. On a scale from 1 to 7, Please indicate your level of agreement with each of the following general statement.

	Totally Disagree						Totally Agree
Going in a bar is truly a joy.	1	2	3	4	5	6	7
Shopping in a bookstore is not a very fun time out.	1	2	3	4	5	6	7
Compared to other things I could have done, the time spent in a concert is truly enjoyable.	1	2	3	4	5	6	7
As far as I am concerned, I am happier when I have people around me rather than being by myself.	1	2	3	4	5	6	7
I automatically know what bars to go out to.	1	2	3	4	5	6	7
I consider myself knowledgeable in terms of concerts offered in the area.	1	2	3	4	5	6	7
Compared to other things I could have done, the time spent in a bar is truly enjoyable.	1	2	3	4	5	6	7
If I had more time I would spend more evenings at home doing my own things.	1	2	3	4	5	6	7
I consider myself knowledgeable in terms of bookstores located in the area.	1	2	3	4	5	6	7
I automatically know what concerts to go out to.	1	2	3	4	5	6	7
Shopping in a bookstore is truly a joy.	1	2	3	4	5	6	7
On a free evening, I would rather go and see a movie by myself than have a television party at a friend's house.	1	2	3	4	5	6	7
Going to a concert is truly a joy.	1	2	3	4	5	6	7
Compared to other things I could have done, the time spent in a bookstore is truly enjoyable.	1	2	3	4	5	6	7
I automatically know what bookstores to go to.	1	2	3	4	5	6	7
Going to a concert is not a very fun time out.	1	2	3	4	5	6	7
Going to a bar is not a very fun time out.	1	2	3	4	5	6	7
I consider myself knowledgeable in terms of bars located in the area.	1	2	3	4	5	6	7

Now I will read to you the description of a service situation that also appears below. Please read it silently while I read it aloud and try to imagine yourself in the described situation. It is very important that you put yourself in the context that is being described.

You are going out tonight to have fun and spend the night in a bar. You are entering the bar and that's what you are experiencing.

Now please watch the short video and **imagine yourself going out in this bar on this particular night.**

Please Wait Instructions before turning the page.

1. On a scale from 1 to 7, Please indicate your level of agreement with each of the following general statement.

	Totally Disagree						Totally Agree
In this bar, I am not noticed in the crowd.	1	2	3	4	5	6	7
In this bar, people consistently touch me.	1	2	3	4	5	6	7
People are very close to me in this bar.	1	2	3	4	5	6	7
Despite the number of people in this bar, I consider this place as mine.	1	2	3	4	5	6	7
There are a lot of people in this bar.	1	2	3	4	5	6	7
This bar is very intimate.	1	2	3	4	5	6	7
Anybody in this bar can have personal moments without being disturbed.	1	2	3	4	5	6	7
I have literally no personal space in this bar.	1	2	3	4	5	6	7
Others intrude my personal space in this bar.	1	2	3	4	5	6	7
In this bar, I am literally in an unknown territory.	1	2	3	4	5	6	7
In this bar, I can easily stake out the best spot for myself.	1	2	3	4	5	6	7
This place is crowded.	1	2	3	4	5	6	7
I am surrounded by people in this bar.	1	2	3	4	5	6	7
I can easily walk through this bar.	1	2	3	4	5	6	7
In case of emergency, people are able to get out of this bar quickly enough.	1	2	3	4	5	6	7
I can easily give a personal phone call on my cellular phone in this bar.	1	2	3	4	5	6	7
Nobody will bother me in this bar.	1	2	3	4	5	6	7

	Totally Disagree						Totally Agree
People are "in my face" in this bar.	1	2	3	4	5	6	7
New customers arriving in this bar are not welcome.	1	2	3	4	5	6	7
This place is small for the number of people in the bar.	1	2	3	4	5	6	7
I do not have to follow other people to leave this bar.	1	2	3	4	5	6	7
This bar respects my privacy.	1	2	3	4	5	6	7
In this bar, I cannot speak privately to my friends.	1	2	3	4	5	6	7
In this bar, I can stay in my own "bubble" and avoid others' contact.	1	2	3	4	5	6	7
In this bar, I feel like home.	1	2	3	4	5	6	7
In this bar, I can act freely.	1	2	3	4	5	6	7
In this bar, people behave in such a way that everybody can have his own personal space.	1	2	3	4	5	6	7
I can stand wherever I want in this bar.	1	2	3	4	5	6	7
There are a high number of people in this bar.	1	2	3	4	5	6	7
I can easily leave this bar.	1	2	3	4	5	6	7
It is easy to roam around in this bar.	1	2	3	4	5	6	7
This bar is packed.	1	2	3	4	5	6	7
I can have my own spot in this bar.	1	2	3	4	5	6	7
People invade my space in this bar.	1	2	3	4	5	6	7
I am myself in this bar.	1	2	3	4	5	6	7
In this bar, everyone keeps to himself/herself.	1	2	3	4	5	6	7
In this bar, people are right on top of you.	1	2	3	4	5	6	7
I wouldn't change my habits in this bar because of other people.	1	2	3	4	5	6	7

	Totally Disagree						Totally Agree
This place is jammed.	1	2	3	4	5	6	7
It is difficult to move freely in this bar.	1	2	3	4	5	6	7
I have time for myself in this bar.	1	2	3	4	5	6	7
People are staring at me in this bar.	1	2	3	4	5	6	7
In this bar, there is enough space to easily stretch my arms and my legs.	1	2	3	4	5	6	7
This place is "dead".	1	2	3	4	5	6	7
I have to squeeze past others in this bar.	1	2	3	4	5	6	7
I can leave this place quickly if needed.	1	2	3	4	5	6	7
Everybody in this bar looks interested in what others are doing.	1	2	3	4	5	6	7
In this bar, I can decide whether or not to talk to someone.	1	2	3	4	5	6	7
I can get time to myself in this bar.	1	2	3	4	5	6	7
This place is virtually empty.	1	2	3	4	5	6	7
It is easy to make my way through the crowd in this bar.	1	2	3	4	5	6	7
I cannot move an inch in this bar.	1	2	3	4	5	6	7
This bar is thick with people.	1	2	3	4	5	6	7
I felt that others were intruding on my privacy in this bar.	1	2	3	4	5	6	7
I can cry or shout in this bar and nobody will ask me anything.	1	2	3	4	5	6	7
It is very difficult to access the bathrooms in this bar.	1	2	3	4	5	6	7
In this bar, I can clearly hear the conversations of others.	1	2	3	4	5	6	7
In this bar, people are observing me.	1	2	3	4	5	6	7
In this bar, nobody will disturb me.	1	2	3	4	5	6	7

	Totally Disagree						Totally Agree
I can move about freely in this bar.	1	2	3	4	5	6	7
I can spend some time by myself, doing what I want, in this bar.	1	2	3	4	5	6	7
Nobody will talk to me in this bar if I do not want to.	1	2	3	4	5	6	7
In this bar, everybody can see what I am doing.	1	2	3	4	5	6	7
I feel that I am intruding on the privacy of others in this bar.	1	2	3	4	5	6	7
I really appreciate the number of people in the bar	1	2	3	4	5	6	7
I feel cramped in this bar.	1	2	3	4	5	6	7
I like the level of personal space I can have in this bar.	1	2	3	4	5	6	7
I do not like my level of privacy in this bar.	1	2	3	4	5	6	7
This bar feels confining to customers	1	2	3	4	5	6	7
I like the freedom of movement I have in this bar.	1	2	3	4	5	6	7
I like being in an unknown territory in this bar.	1	2	3	4	5	6	7
The bar is a little too busy	1	2	3	4	5	6	7
I am very satisfied with the atmosphere in this bar.	1	2	3	4	5	6	7
I enjoy being in this bar.	1	2	3	4	5	6	7
I like the overall experience in this bar.	1	2	3	4	5	6	7
I would recommend this bar to other people.	1	2	3	4	5	6	7
Given a choice, I would probably not go back in this bar	1	2	3	4	5	6	7

2. This information, like the rest of the questionnaire, will be kept strictly confidential. We will only use the following demographic information to classify and better understand your responses.

a. What is your age? O Under 20. O 21 - 30 O 31 - 40
O 41 – 50 O 51 - 60 O Over 61.

b. What is your gender? O Male O Female.

c. On a scale from 1 (totally disagree) to 7 (totally agree), Please indicate your level of agreement with each of the following general statement.

I consider myself Anglophone 1 2 3 4 5 6 7

I consider myself Francophone 1 2 3 4 5 6 7

I consider myself_____(Specify) 1 2 3 4 5 6 7

APPENDIX III

Annex 3- Scenarios used for study 2

Scenario 1 : Bar (fun)-high Expec (crowded)- not scarce

It is Friday night. You want to spend the night in a very popular student bar close to the university. This is a very fun place to go and it is usually very busy. The Friday night parties are advertised in newspapers and television all over the city. The owners expect to have a full house. You decide to go there and enjoy the party.

Scenario 2 : Bar (fun)-high Expec (crowded)- scarce

It is Friday night. You want to spend the night in a very popular student bar close to the university. This is the grand opening night of this fun place and attending this event has been described in newspapers as *« one unique journey, the party experience of a lifetime»*. This opening has been advertised in newspapers and television all over the city. It is going to be very busy at this very exclusive event. The owners expect to have a full house. You are one of the few lucky customers with an invitation and you decide to go there and enjoy the party.

Scenario 3 : Bar (fun)-low Expec (crowded)- not scarce

It is Monday night. You want to spend the night in a bar close to the university. This is a fun place to go but it is exam period at the university. Usually, they have private and exclusive parties but tonight nothing special is planned and anybody has access to this bar. The owners expect to have a slow Monday night. You decide to go there anyway and to enjoy the party.

Scenario 4 : Bar (fun)-low Expec (crowded)- scarce

It is Monday night. You want to spend the night in a bar close to the university. This is a fun place to go but it is exam period at the university. Usually on Mondays, they have very private and exclusive parties. The access to this bar is reserved to members only. The owners expect to have a very slow Monday night. However, you are one of the few lucky customers with an invitation and you decide to go there and enjoy the party.

Scenario 5 : Resto (fun)-high Expec (crowded)- not scarce

It is Friday evening. You want to spend the evening in a very popular restaurant close to the university. This is usually a very fun and busy place to eat. The Friday evening specials are advertised in newspapers and television all over the city. This is the busiest evening of the week at this place. The owners expect to have a full house tonight. You decide to go there and enjoy the dinner.

Scenario 6 : Resto (fun)-high Expec (crowded)- scarce

It is Friday evening. You want to spend the night in a very popular restaurant close to the university. This is the grand opening evening of this fun place and attending this event has been described in newspapers as *« one unique journey, the gourmet experience of a lifetime»*. This opening has been advertised in newspapers and television all over the city. It is going to be very busy at this very exclusive event. The owners expect to have a full house. You are one of the few lucky customers with an invitation and you decide to go there and enjoy the dinner.

Scenario 7 : Resto (fun)-low Expec (crowded)- not scarce

It is Monday evening. You want to spend the evening in a restaurant close to the university. This is usually a fun and busy place to eat but it is the exams period at the university. The owners expect to have a very slow Monday night. From time to time, they have private and exclusive evenings but tonight nothing special is planned and everybody has access to the restaurant. You decide to go there and to enjoy the dinner.

Scenario 8 : Resto (fun)-low Expec (crowded)- scarce

It is Monday evening. You want to spend the evening in a restaurant close to the university. This is usually a fun and busy place to eat but it is the exams period at the university. The owners expect to have a very slow Monday night. On Mondays, they have very private and exclusive evenings. Therefore tonight, the access to the restaurant is reserved to members only. However, you are one of the few lucky customers with an invitation and you decide to go there and enjoy the dinner.

Scenario 9 : Bookstore (util)-high Expec (crowded)- not scarce
It is the first day of class. You are trying to buy your class books for the present semester at the university bookstore. This is the busiest time of the year at this place. The owners expect to have a full house all day long. You decide to go there and to purchase your books.

Scenario 10 : Bookstore (util)-high Expec (crowded)- scarce

It is the first day of class. You are trying to buy your class books for the present semester at the university bookstore. This is the grand opening day of this place and this event has been advertised in newspapers and television all over the city. The access to the store will be restricted today as it is going to be very busy at this very exclusive event. The owners expect to have a full house. You are one of the few lucky customers with an invitation and you decide to go there and to purchase your books.

Scenario 11 : Bookstore (util)-low Expec (crowded)- not scarce

It is the end of the semester. You are trying to buy your class books for the next semester at the university bookstore. This is the slowest time of the year at this place. The owners expect to have a very quiet day. From time to time, they have exclusive sales days where priority is given to students of specific schools within the university but today nothing special is planned and everybody has unlimited access to the bookstore. You decide to go there and to purchase your books.

Scenario 12 : Bookstore (util)-low Expec (crowded)- scarce

It is the end of the semester. You are trying to buy your class books for the next semester at the university bookstore. This is the slowest time of the year at this place. The owners expect to have a very quiet day. Today, they have an exclusive sales day where priority is given to students of specific schools within the university. Therefore today, the access to the bookstore is restricted to students registered in your department. So, you are one of the few potential lucky customers. You decide to go there and to purchase your books.

APPENDIX IV

In this study, we are interested in your perceptions of service environments.

The information we collect for this study will only be used for academic purposes and your answers will be confidential (i.e. your name and/or identifying information will not be published in any manner). We hope that participating in this survey will be interesting!

Thank you for your help,

Frank Pons
Concordia University

Please Wait For Instructions before turning the page.

1. On a scale from 1 to 7, Please indicate your level of agreement with each of the following general statements.

		Totally Disagree						Totally Agree
ATSCI	**When I am uncertain about how to act in a social situation, I look to the behavior of others for clues.**	1	2	3	4	5	6	7
ATSCI	**It's important for me to fit into the group I am with.**	1	2	3	4	5	6	7
CSII	**I often identify with other people by purchasing the same products and brands they purchase.**	1	2	3	4	5	6	7
ATSCI	I try to pay attention to the reactions of others toward my own behavior in order to avoid being out of place.	1	2	3	4	5	6	7
CSII	**If other people can see me using a product, I often purchase the brand they expect me to buy.**	1	2	3	4	5	6	7
IN	**For physical exercise or as a sport, I would prefer an individual sport (skiing, tennis) rather than a team sport (football, soccer).**	1	2	3	4	5	6	7
CSII	**I achieve a sense of belonging by purchasing the same products and brands that others purchase.**	1	2	3	4	5	6	7
IN	**In my free time, I would rather be with a group of my friends than by myself at home.**	1	2	3	4	5	6	7
AST	**My ideal home would be peaceful and quiet.**	1	2	3	4	5	6	7
IN	**On a free evening, I would rather go and see a movie by myself than have a television party at a friend's house.**	1	2	3	4	5	6	7
COMP	**Basing my life on duty to others is extremely desirable.**	1	2	3	4	5	6	7
AST	**I don't like to have lots of activities around me.**	1	2	3	4	5	6	7
AST	**I like busy, noisy places.**	1	2	3	4	5	6	7
COMP	**Sharing my personal feelings with others is extremely desirable.**	1	2	3	4	5	6	7
COMP	**Wanting to repay others' thoughtless actions with friendship is extremely desirable.**	1	2	3	4	5	6	7
INDIV	**I don't think it is necessary to act as fellow group members would prefer.**	1	2	3	4	5	6	7

INDIV	**I don't change my opinions to conform to those of the majority.**	1	2	3	4	5	6	7
INDIV	**I don't support my group when they are wrong.**	1	2	3	4	5	6	7
INDIV	**I assert my opposition when I disagree strongly with the members of my group.**	1	2	3	4	5	6	7
EXP	**In my town, I automatically know what bars to go to.**	1	2	3	4	5	6	7
EXP	**I consider myself knowledgeable in terms of bars opened in the area.**	1	2	3	4	5	6	7
FUN	**For me, going out to a bar is a fun experience.**	1	2	3	4	5	6	7

ATSCI: Attention to social comparison scale (Lennox and Wolfe, 1984); COMP: Compliance dimension CAD scale (Cohen, 1967); INDIV: Individualism (Hofstede, 1980); IN: Inner-Other directedness scale (Kassarjian, 1962); CSII: Normative dimension of consumer susceptibility to interpersonal influence (Bearden et al, 1989), EXP: Consumer Expertise (Kleiser and Mantel, 1994).

Now I will read to you the description of a service situation that also appears below. Please read it silently while I read it aloud and try to imagine yourself in the described situation. It is very important that you put yourself in the context that is being described.

It is Friday night. You want to spend the night in a very popular student bar close to the university. It is the grand opening night of this fun place and attending this event has been described in newspapers as *« one unique journey, the party experience of a lifetime»*. This opening has been advertised in newspapers and television all over the city. It is going to be very busy at this very exclusive event. The owners expect to have a full house. You are one of the few lucky customers with an invitation and you decide to go there and enjoy the party.

Now please **imagine yourself being in this bar on this particular night.**

Please Wait For Instructions before turning the page.

2. On a scale from 1 to 7, Please indicate your level of agreement with each of the following general statements regarding the previous situation.

	Totally Disagree						Totally Agree
In this place, I expect to be continuously touched by other people.	1	2	3	4	5	6	7
In this place, I expect people to be very close to me.	1	2	3	4	5	6	7
I expect a lot of people to be in this place.	1	2	3	4	5	6	7
I expect to have literally no personal space in this place.	1	2	3	4	5	6	7
Being in this place is an uncommon experience.	1	2	3	4	5	6	7
I expect this place to be crowded.	1	2	3	4	5	6	7
I expect to easily walk through this place.	1	2	3	4	5	6	7
In case of an emergency, I expect people be able to get out of this place quickly enough.	1	2	3	4	5	6	7
It is a unique opportunity to be able to spend some time in this place.	1	2	3	4	5	6	7
I expect a large number of people in this place.	1	2	3	4	5	6	7
I expect this place to be jammed.	1	2	3	4	5	6	7
I expect to have fun in this place.	1	2	3	4	5	6	7
In this place, I expect to have time for myself.	1	2	3	4	5	6	7
I expect to be able to leave this place quickly if needed.	1	2	3	4	5	6	7
I expect this place to be virtually empty.	1	2	3	4	5	6	7
In this place, I expect to easily make my way through the crowd.	1	2	3	4	5	6	7

In this place, I expect people to observe me.	1	2	3	4	5	6	7
In this place, I expect nobody to disturb me.	1	2	3	4	5	6	7
I expect to move about freely in this place.	1	2	3	4	5	6	7
It is a unique experience to be in this place.	1	2	3	4	5	6	7
I expect to be able to spend some time by myself in this place.	1	2	3	4	5	6	7
In this place, I expect everybody to see what I am doing.	1	2	3	4	5	6	7
In this place, I expect to intrude on others' privacy.	1	2	3	4	5	6	7

Once again, we remind you to picture yourself in the following service situation.

It is very important that you put yourself in the context that is being described.

It is Friday night. You want to spend the night in a very popular student bar close to the university. It is the grand opening night of this fun place and attending this event has been described in newspapers as *« one unique journey, the party experience of a lifetime»*. This opening has been advertised in newspapers and television all over the city. It is going to be very busy at this very exclusive event. The owners expect to have a full house. You are one of the few lucky customers with an invitation and you decide to go there and enjoy the party.

Now please watch the following **short video** and **imagine yourself being in this place.** This video represents what you can see when you enter the place previously described.

Please Wait For Instructions before turning the page.

1. Please read very carefully the following questions. Each statement requires TWO (2) answers.

On a scale from 1 to 7, Please indicate **first** your level of agreement with each of the general statements made in the left part of the questionnaire. **Then,** indicate how much you like the statement you just made for this situation.

In fact, you always indicate your degree of liking of the situation that you have just encountered in the video.

EXAMPLE : Let's do an example together.

For instance, let's say you find the place previously presented in the video **as very spacious** and **you did not appreciate at all the fact that according to you, this place is very spacious**, you would then choose the following answers:

	Strongly Disagree					Strongly Agree		Strongly Dislike					Strongly Like	
This place is very spacious.	1	2	3	4	5	6	**7**	**1**	2	3	4	5	6	7

BEGINNING OF THE QUESTIONNAIRE:

	Strongly Disagree						Strongly Agree	Strongly Dislike						Strongly Like
In this place, I am continuously touched by others	1	2	3	4	5	6	7	1	2	3	4	5	6	7
People are very close to me in this place.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
There are a lot of people in this place.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
I have literally no personal space in this place.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
This place is crowded.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
I can easily walk through this place.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
In case of emergency, people could leave this place quickly.	1	2	3	4	5	6	7	1	2	3	4	5	6	7

There are a high number of people in this place.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
This place is jammed.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
I have time for myself in this place.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
I can leave this place quickly if needed.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
This place is virtually empty.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
It is easy to make my way through the crowd in this place.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
	Strongly Disagree						Strongly Agree		Strongly Dislike						Strongly Like
In this place, people are observing me.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
In this place, nobody will disturb me.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
I can spend some time by myself in this place.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
In this place, everybody can see what I am doing.	1	2	3	4	5	6	7		1	2	3	4	5	6	7
I feel that I am intruding on the privacy of others in this place.	1	2	3	4	5	6	7		1	2	3	4	5	6	7

	Less than expected			same as expect		more than expected		Strongly Dislike						Strongly Like
There are more customers than I expected in this place.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
In this place, I have more personal space than I expected.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
In this place, I have more freedom of movement than I expected.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
In this place I can have more privacy than I first expected.	1	2	3	4	5	6	7	1	2	3	4	5	6	7

2. For the following questions, Please indicate the extent to which you felt as described by each of the adjectives during your visit to the place presented in the video.

Happy	1	2	3	4	5	6	7	**Unhappy**
Pleased	1	2	3	4	5	6	7	**Annoyed**
Contented	1	2	3	4	5	6	7	**Melancholic**
Hopeful	1	2	3	4	5	6	7	**Despairing**
Stimulated	1	2	3	4	5	6	7	**Relaxed**
Excited	1	2	3	4	5	6	7	**Calm**
Aroused	1	2	3	4	5	6	7	**Unaroused**
Frenzied	1	2	3	4	5	6	7	**Sluggish**
Wide awake	1	2	3	4	5	6	7	**Sleepy**

In the previous situation, I felt....	Not at Much So						Very All
Happy	1	2	3	4	5	6	7
Delighted.	1	2	3	4	5	6	7
Sad	1	2	3	4	5	6	7
Nervous	1	2	3	4	5	6	7
Alert	1	2	3	4	5	6	7
Surprised	1	2	3	4	5	6	7
Mad	1	2	3	4	5	6	7
Defiant	1	2	3	4	5	6	7
Guilty	1	2	3	4	5	6	7
Shy	1	2	3	4	5	6	7
Ashamed	1	2	3	4	5	6	7
Repentant	1	2	3	4	5	6	7
Disgusted	1	2	3	4	5	6	7
Angry	1	2	3	4	5	6	7
Irritated	1	2	3	4	5	6	7
Astonished	1	2	3	4	5	6	7
Depressed	1	2	3	4	5	6	7
Fearful	1	2	3	4	5	6	7
Cheerful	1	2	3	4	5	6	7

3. On a scale from 1 to 7, Please indicate your level of agreement with each of the following general statements regarding the situation previously described and shown in the video.

	Strongly Disagree						Strongly Agree
This place feels confining to customers.	1	2	3	4	5	6	7
This place is a little too busy.	1	2	3	4	5	6	7
I am very satisfied with the atmosphere in this place.	1	2	3	4	5	6	7
I enjoy being in this place.	1	2	3	4	5	6	7
This place seems very spacious.	1	2	3	4	5	6	7
I like my overall experience in this place.	1	2	3	4	5	6	7
It is a unique experience to be in this place.	1	2	3	4	5	6	7
The place has an open, airy feeling to it.	1	2	3	4	5	6	7
This place is very similar to places I usually go to.	1	2	3	4	5	6	7
Going to this place is truly a joy.	1	2	3	4	5	6	7
I would recommend this place to other people.	1	2	3	4	5	6	7
This place seems very crowded to me.	1	2	3	4	5	6	7
People are going to this place to have a good time.	1	2	3	4	5	6	7
I feel cramped being in this place.	1	2	3	4	5	6	7
Going to this place is not a very fun time out.	1	2	3	4	5	6	7

There are a lot of customers in this place.	1	2	3	4	5	6	7
It is a very unique opportunity to be able to spend some time in this place.	1	2	3	4	5	6	7
This place gives a closed feeling.	1	2	3	4	5	6	7
Given a choice, I would probably not go back to this bar.	1	2	3	4	5	6	7
People in this place are very similar to me.	1	2	3	4	5	6	7
Being in this place is an uncommon experience.	1	2	3	4	5	6	7
This video is fairly consistent with reality.	1	2	3	4	5	6	7
I would be surprised to encounter such a situation in real life.	1	2	3	4	5	6	7

4. Please choose a number and write it down in the blank area.

I would say that there were around _____ people in this place.

5. This information, like the rest of the questionnaire, will be kept strictly confidential. We will only use the following demographic information to classify and better understand your responses.

a. What is your age? O Under 20. O 21 - 30 O 31 - 40
O 41 – 50 O 51 - 60 O Over 61.

b. What is your gender? O Male O Female.

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