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Experience Infusion: How to Improve Customer Experience with Incidental Activities

Mathew Chylinski, Ashish Sinha, David Sugianto Lie and William David Neill

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Mathew Chylinski (Dr.), Senior Lecturer, School of Marketing UNSW Business School University of New South Wales, Quadrangle 3025 UNSW Sydney NSW 2052 Australia, +61-2-9385 3344, m.chylinski@unsw.edu.au

Ashish Sinha (Prof.), Associate Dean (Research and Development), The Dean's Office UTS Business School, University of Technology Sydney, 14-28 Ultimo Rd Ultimo NSW 2007 Australia, +61-2-9514 9233, ashish.sinha@uts.edu.au

David Sugianto Lie (Mr.), PhD Candidate, School of Marketing UNSW Business School University of New South Wales, Quadrangle 3005 UNSW Sydney NSW 2052 Australia, +61-2-9385 2638, david.lie@unsw.edu.au

William David Neill (Dr.), Co-founder and Director of Venture Capital, willneill@gmail.com

Authors' Note:
Mathew Chylinski is Senior Lecturer of Marketing, UNSW Business School, University of New South Wales, (e-mail: m.chylinski@unsw.edu.au). Ashish Sinha is Professor of Marketing and Associate Dean (Research and Development), UTS Business School, University of Technology Sydney (e-mail: Ashish.Sinha@uts.edu.au). William Neill is Co-founder & Director, Venture Capital & Private Equity, Sydney Australia (e-mail: willneill@gmail.com). David Lie is a Doctoral Candidate of Marketing, UNSW Business School, University of New South Wales (e-mail: david.lie@unsw.edu.au).

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EXPERIENCE INFUSION: HOW TO IMPROVE CUSTOMER EXPERIENCE WITH INCIDENTAL ACTIVITIES

Abstract:

Even though positive experiences can improve sales (Holbrook 2000), designing retail experiences for customers who face significant transaction costs during decision making remains challenging (Iyengar and Lepper 2000). To address this problem, the article proposes a framework of compensatory experience binding where positive experiences, which may be incidental or outside of the decision process, compensate for the negative experience of transaction costs during decision making. We analyze data obtained from an elaborate experimental design by testing a panel dynamic system of equations according to a Bayesian (MCMC) approach. We find that the 'Infusion' of an intrinsically enjoyable but incidental activity, such as gameplay, with a principal-agent conjoint task improves the overall experience of the decision task and increases the accuracy of the decision making. From an academic perspective this highlights the compensatory nature of experience consumption, and suggests new insights into engagement through the psychological state of flow. Even more importantly, for a manager, our study implies a 'plug and play' approach to improved customer experience without the exhaustive redesign of an established marketing system.

Key words: experience consumption, process, outcome, decision making, flow

In modern consumer markets the consumption of experiences, like the feel of a sports car's acceleration or the social atmosphere surrounding a pint of beer, has become a selling point for many brands (Brakus, Schmitt, and Zarantonello 2009). The tactile design of Apple's laptop, the enjoyment of Coca-Cola, or McDonald's "I'm loving it" slogan have raised expectations of experience consumption. Much as people like to be entertained by a movie or a performance, customers now demand enjoyable experiences when they interact with a brand. Despite this, many brand interactions are not intrinsically enjoyable (Berry 2000). Buying groceries at a supermarket is usually mundane, searching for the best lounge deal can sap one's will, while booking an airline ticket with a discount provider often becomes frustrating as one is bombarded with unrelated offers and information. Customers endure such discomfort in exchange for the benefit of the final choice: a nice meal, a chic lounge to sit on, and a cheap flight to Majorca. This highlights a problem of experience consumption: that the utility of the decision process tends to be negatively correlated with the final choice. To improve one, a customer forgoes the other, which makes experience consumption difficult to implement in many settings (Brakus, Schmitt, and Zarantonello 2009).

While managing experience consumption is gaining attention in marketing (Yang, Mao, and Paracchio 2012), redesigning marketing systems (e.g., online retail stores), which traditionally rely on mundane and effortful customer decision making (e.g., search, evaluation, payment and delivery), can be costly and may sometimes adversely affect the quality of customer decisions (Dubbels 2013). Experience infusion suggests an alternative approach. It attempts to address the problem of experience consumption by connecting a marketing system with experience consumption facilitated through an 'incidental' activity, one which is not part of the buying process but nonetheless improves the customer's experience without detracting from the final choice.

Games are a perfect example of this; they are the quintessential experience consumption. PricewaterhouseCoopers (2015) estimates that consumers have spent more time, effort and money playing games this decade than at any other time in the past. The popularity of games has sometimes been portrayed as unproductive because they do not lead to a utilitarian outcome like other types of work activities. An activity for the sake of itself seems less productive, and yet this very property of games makes them very appealing to many consumers. Experience infusion relies on this type of activity. In contrast to existing concepts such as Advergames (Giallourakis 2000), Gamification (Burke 2011), and Gameful Design (McGonigal 2011), experience infusion does not attempt to redesign a marketing system to make it more game-like. Instead, it looks to supplement an existing (often tedious) process with experience consumption.

There are a number of unique advantages to this approach. Firstly, experience infusion disrupts the reward delay that typically exists within a marketing system. Consumers routinely struggle to trade-off immediate pleasurable experiences (e.g., playing online games) with effortful decision-making that delays gratification (e.g., evaluating alternative attributes for a stereo system) (Payne, Bettman, and Johnson 1993). By splicing an effortful decision process with experiences that provide instantaneous gratification, experience infusion shortens the delay between effort and reward. Secondly, since decisions and games present their own schedules of challenge, skill and reward, they can be independent of each other. For example, a consumer who spends one hour evaluating a stereo system may experience a sustained challenge for little or no reward. Conversely, a consumer who plays a game experiences immediate rewards with limited effort. For a manager, it may be easier to incorporate a game than to remodel an established decision task for additional rewards.

Conceptually, mixing decision and game experiences in close temporal proximity creates opportunity for spill-over effects. We contend that the overall experience of buying a stereo system, for example, can be described by a compensatory model that trades off positive and negative experiences to form a general evaluation of the experience. This occurs as a result of psychological binding between experiences from different activities. For instance, a consumer evaluating a stereo system on her own will have a different experience to one who evaluates the same stereo system while holding an entertaining conversation with a friend. Psychologists often describe compensating behaviours, such as eating chocolate during times of stress, as a way to restore a positive experience (Bäckman and Dixon 1992). It is important for marketers to understand the extent of experience spill-over effects, and whether experiences from unrelated tasks (such as games) improve or hinder decision outcomes within marketing systems.

Theoretically, the psychological state of flow (Csikszentmihalyi 1991), which has been used previously to describe engaging experiences in the context of gameplay, provides a starting point. For us, flow offers a plausible mechanism to represent the binding of mundane and enjoyable experiences according to schedules of challenge and skill afforded by different activities. In this article, we explore the dynamic effects of this binding on the accuracy of final choices in an evaluation task. In particular, we propose a theoretical framework that uses flow as a mediator between two tasks: one an online game and the other an evaluation of an electronics product (such as a stereo system). We propose that flow mediates between these activities and between the outcomes of those activities, such as accuracy of choice. In terms of dynamics, we explore the extent to which the experience of flow is strengthened by the presence of a game and, in turn, how this affects customer perceptions of flow in the subsequent decision rounds. That is, we study the extent to which flow binds across different activities, activities and outcomes, and time periods.

Our contributions are therefore both theoretical as well as methodological, with direct implications for managers. We propose a compensatory framework of experience binding that we contend provides new insights into engagement through the psychological state of flow. Second, we construct a rich experimental setting that explores levels of experience infusion across three blocks of an experiment each based on a number of repeated measures. In block 1 of the experiment, we test the key binding properties of flow in a game infused decision task. In block 2, we decouple the game from the decision and show (within subject) how the binding properties are dependent on gameplay. In block 3, we introduce gameplay again to explore the robustness of the model. That is, we switch experience infusion on, turn it off, and then back on again across the respective blocks of the experiment. Third, to analyse the data, we apply a panel dynamic system of equations using a Bayesian (MCMC) approach. And finally, for managers, our study offers a 'plug and play' approach to improve customer experience without the exhaustive redesign of an established marketing system. We begin by reviewing the literature on experience consumption, experience regulation, and compensatory consumer behaviour as the basis for the theoretical framework.

CONCEPTUAL DEVELOPMENT

Managers traditionally understand that matching shopping outcomes with consumer preferences improves customer satisfaction. Favourable outcomes can reduce dissonance as well as psychological conflict, and they offer a sense of closure to the decision process (Jonas et al.

2001; O'Neill and Palmer 2004). In turn, firms benefit as customers pay more, buy larger quantities, and return to buy again (Sirdeshmukh, Singh and Sabol 2002; Chaudhuri and Holbrook 2001). Recently, the focus has shifted to the processes by which decisions are made, and, by extension, to the experience of decision making (Dhar and Simonson 2003; Stotegraaf and Atuahene-Gima 2011). In today's socially connected and experience-orientated marketplace, consumer attention and engagement have become the new 'black gold' (Achrol and Kotler 2012). Firms compete to engage customers through enjoyable shopping experiences because in the new experience economy value is derived from the process as much as the outcome.

However, there is a conflict between the experience of decision making and the final choice. The problem arises because (for any activity) consumers can face two distinct utility functions (Haubl and Trifts 2000). Consumers can derive value (or cost) from the decision process itself (i.e., search, evaluation, selection) or they can derive value (or cost) from the final choice of a product or a service (Thaler 1985). Much of the recent discussion about multiple utilities has occurred outside of marketing (Evren 2014; Heller 2012). The idea that multiple utility functions exist, and that modeling such utilities is worthwhile, has been debated in the economics literature (Lutz 1993). Social economists have gone as far as to model multiple selves, where a hedonic self and a utilitarian self (each with a different utility function) compete to control a consumer's behavior (Bazin and Ballet 2006). In most representations these utility functions are negatively correlated. That is, to improve the value of the final choice (a utilitarian outcome), consumers tend to spend more time, money, or effort during the decision process (Bettman, Luce, and Payne 1998). In consequence, they forego the hedonic utility of decision making for the added benefit of the final choice. In contrast, consumers who limit the costs involved during decision making, either by focusing on enjoyable tasks during the decision process (e.g., socializing with friends) or by making decisions quickly to avoid costly deliberation, run the risk of making poorer final choices. Hence, they lower the utility of the final choices in exchange for the benefits of the experience during the activity.

Designing enjoyable processes without compromising outcome utility remains challenging in marketing (Holbrook 2000). While construal-level models explain why some customers may assign more value to the process over the outcome during decision making (Yang, Mao, and Peracchio 2012), reconciling the two utility functions remains difficult in part because the conceptualization of the decision *process* itself is undifferentiated. Yet, evidence suggests that different types of processes drive the overall experience during decision making.

Interpreted according to a means-ends chain analogy, where the actions represent the means and the outcome the end, Yang, Mao, and Peracchio (2012) suggest the decision process leads to an outcome. We refer to it as an instrumental process because customers follow utilitarian motives seeking extrinsic reward for their actions in the form of getting the best deal, gaining reward points, or securing a discount (Wyer and Xu 2010). The greater the effort invested, the greater the expected payoff at the end. Customers plan and coordinate instrumental activities to maximise external rewards by making efficient, accurate, and timely decisions (Biehal and Chakravarti 1983). In marketing, these motivations are routinely applied to loyalty and reward-type programs (Kivetz and Simonson 2002). The literature suggests that some people may derive greater value from the instrumental process than others (e.g., Higgins, Kruglanski, and Pierro, 2003; Yang, Mao, and Peracchio 2012), but in general economists treat the instrumental process as a transaction cost.

In contrast, an intrinsic process is not related to an outcome of decision-making; rather, it represents a reward of its own (Kempf 1999). In comparison to instrumental behaviour, intrinsic behaviour provides fun, amusement, and sensory stimulation during the activity itself (Holbrook and Hirschman 1982). This type of behaviour involves an ongoing and non-directed search for enjoyable experiences, where consumers remain engaged in the activity rather than trying to complete it (Addis and Holbrook 2001). The promise of the experience economy is predicated on the idea of an intrinsic process. The difficulty in applying it, however, is that intrinsic activity is rarely related to good decision making. Here lies the managerial problem: how to engage a customer in intrinsic-like behaviour given an instrumental-like setting?

We contend that in most real world applications the managerial problem is hard to solve since the utility of an instrumental process does not aid (and often interferes) with the utility of the decision outcome (Häubl and Trifts 2000). Progress in one direction can mean a loss in the other. Figure 1 summarises the different utilities in the means-ends chain diagram for the two types of processes. Our goal is to examine an alternative approach based on the *parallel* processing of a) intrinsic activity during b) an instrumental process. We call this parallel arrangement ‘Experience Infusion’ since the intrinsic activity is added (or infused) to an already existing instrumental process. Rather than redesign the instrumental process, we combine it with an intrinsic activity in the expectation of c) compensatory binding between the utilities of the two processes.

--- Insert Figure 1 about here ---

To explore the plausibility of binding between experiences we turn to psychological literature.

Theoretical Basis

Researchers in social psychology characterise intrinsic activities as positive experiences imbued with a deep state of absorption (Csikszentmihalyi 1988; Novak, Hoffman and Duhachek 2003). Absorption occurs when people become unaware of the passage of time or fail to notice outside distractions. Such individuals merge action and awareness through deeply concentrating on the task at hand (Fullagar and Kelloway 2009). Simply put, an intrinsic activity results from a captivating and pleasurable experience that is autotelic, meaning it is a reward in itself which represents the essence of the flow experience (Csikszentmihalyi 1999).

Compared to other experiences, flow reflects a degree of cognitive, emotional, and behavioural congruency (Rettie 2001) arising from a balance between the perceived challenge of and the skill in an activity. This conceptualization is useful because it classifies a range of behaviours according to these underlying factors. For instance, an excessive challenge is known to cause anxiety, while excessive skill creates boredom. When both challenge and skill fall below a critical level, the undesirable state of apathy occurs (LeFevre 1988; Eisenberger et al. 2005). In these states, effort feels considerably more taxing and customers are prone to exit from decision-making (Baumann and Scheffer 2010).

As they exit decision-making, customers typically switch to more pleasant activities, like watching TV or socialising. That is, unpleasant experiences (such as anxiety, boredom, or apathy) often lead to what is termed as palliative efforts. These efforts encourage actions that alter the experience to improve a sense of wellbeing and provide a feeling of control (Park 2010). A number of researchers call these efforts ‘compensatory’ because they are designed to substitute, or compensate, for unpleased experiences. Compensatory behaviour has been reported across a range of contexts and scenarios. In particular, ‘affirmative’ behaviours, which are a particular type of compensatory action, occur in the context of uncertainty management (Van den Bos 2001), cognitive dissonance (Brehm 2007), and goal frustration (McGregor et al. 2010) that result from excessive challenge during decision-making. Under these circumstances, consumers revert to established and familiar activities, which offer an increased perception of skill or mastery. They switch to these activities in order to regain a sense of control and improve their overall experience.

Experience regulation through compensatory behaviour means that positive experiences can compensate for the negative ones. Researchers commonly find that incidental emotions spill over between unrelated situations (Han, Lerner, and Keltner 2007). Watching a happy video clip puts people in a positive mood for a job interview, while socializing with friends on the weekend makes the drudgery of work less vivid during the week. Consequently, consumers will use these compensating activities for experience regulation (Di Muro and Murray 2012). Research suggests that mood maintenance, which seeks out activities that encourage the same type of experience, dominates when challenges are matched with the skill level of an individual; while compensatory behaviour arises when challenge and skill are mismatched. In those situations, activities that supplement a deficiency in either skill or challenge are applied to restore the overall experience (López and De Maya 2012).

Games as Compensatory Activity

The domain where the flow experience is naturally observed is gameplay (Carlton 2013). Games can be viewed as intrinsic processes offering clear goals, explicit rules, challenges and interaction (Alexander 2012). This makes them particularly suited to experience consumption. Consumption of game experiences has grown rapidly, particularly for electronic games. Over 72% of US households (42% female) play electronic games, where the average adult player is 37 years old and has been engaging with games for over 12 years (Entertainment Software Association 2011). Games are captivating because they offer a narrative and meaning for players, while deliberately matching skills to challenges in a series of difficulty levels. Gamers report engagement in gameplay for enjoyment, relaxation, and a sense of control, which may be missing from everyday activities (Holbrook et al. 1984; Dhal and Moreau 2007). The recent rise in casual games, those short but frequent bursts of online gameplay, attests to the growing need for experience consumption that breaks up extended periods of daily performance (Redondo 2012).

The unique characteristics of games have been recognised by managers, and the application of games to marketing has been rising. Concepts such as Advergames (Giallourakis 2000), Gamification (Burke 2011), and Gameful Design (McGonigal 2011) point to an innovative positioning for games within marketing efforts (Deterding et al. 2011a). Both traditional retail (e.g., Disney, Lynx, Nike) and online experiences (e.g., LinkedIn and Facebook) have added game elements to their multichannel operations. The rationale is that games are intrinsically rewarding. When paired with marketing communications, the positive experiences may transfer to otherwise mundane and cognitively taxing activity (Hamari and Lehdonvirta 2010). For example, IBM provides several online games such as “Innov8”, designed to hone in the business process management skills of IT and business professionals, and “Money Metropolis” is designed to teach children about the fundamentals of money (Bechara and Damasio 2005; Carlton 2013).

However, unlike Gamification that aims to redesign a marketing system by extrinsically motivating consumers with virtual points, achievements, and badges in return for task completion (Deterding et al. 2011b, Huotari and Hamari 2011), experience infusion does not alter an existing marketing system. It is simpler and, in contrast to Gameful Design (Puccinelli et al. 2009), a narrower approach. It focuses on a single decision objective (e.g., buying the stereo system) with the aim of enhancing a consumer's experience of the buying process by providing a momentary diversion.

The Binding Role of Flow

Experience regulation is a conscious process of choosing a set of activities according to their properties for increased or decreased experience (Avnet and Higgin 2006). Just as the mental accounting literature demonstrates trade-offs for gains and losses (Thaler 1985), the psychological literature suggests trade-offs in relation to intrinsic (e.g., gameplay) and instrumental (product selection) activities (Di Muro and Murray 2012). Our speculation is that these activities contribute to the experience of flow *independently*, since they carry different and unrelated schedules of challenge and skill. That is, we hypothesize that:

H1 ($CC_{itj} \rightarrow F_{itj}$): the greater the challenge of a choice activity (CC_{itj}) the lesser the experience of flow (F_{itj}).

H2 ($SC_{itj} \rightarrow F_{itj}$): the greater the skill of a choice activity (SC_{itj}) the greater the experience of flow (F_{itj}).

H3 ($CG_{itj} \rightarrow F_{itj}$): the greater the challenge of gameplay (CG_{itj}) the lesser the experience of flow (F_{itj}).

H4 ($SG_{itj} \rightarrow F_{itj}$): the greater the skill of gameplay (SG_{itj}) the greater the experience of flow (F_{itj}).

Mood regulation studies, which show that individuals strive to achieve experiences congruent with the available context (e.g., appearing serious at a job interview), consider experience as an input to decision making itself (Martin 2001). During instrumental activities mood can alter the sensitivity to losses or gains, and distort the tolerance of risk (Werner, Duschek, and Schandry 2009). For instance, depressed individuals evidence lower sensitivity to rewards, and increased aversion to risk (Miu, Heilman and Houser 2008). In contrast, positive experiences correlate with increased reward seeking. Similarly, depth of information processing can be affected by subjective experience. A number of studies indicate that people in a positive mood are prone to simple heuristic decisions (Bless et al. 1996; Griskevicius et al. 2009). Further, Tiedens and Linton (2001) show how an increased perception of certainty due to feelings of happiness may account for this result. So, the evidence that subjective experience alters evaluation during decision making appears tied with perceptions of confidence and skill. Consequently, our expectation is that the positive aspects of the flow experience will increase perceptions of skill during an activity. Consequently, we hypothesize that:

H5 ($F_{it-1j} \rightarrow SC_{itj}$): the past experience of flow (F_{it-1j}) increases the perceptions of skill in a choice activity (SC_{itj}).

H6 ($F_{it-1j} \rightarrow SG_{itj}$): the past experience of flow (F_{it-1j}) increases the perceptions of skill in gameplay (SG_{itj}).

Evidence has also been accumulated that people in a positive mood think and act in accordance with being happy (Di Muro and Murray 2012). They are more helpful if helping involves uplifting scenarios (Carlson, Charlin, and Miller 1988), and they avoid taking risks because they have more to lose (Isen and Patrick 1983). A consistent finding is that such mood maintenance can be automatic and self-reinforcing (Handley et al. 2004). The implication is that experience in one time period acts as an input to experience in the next. We can speculate that the flow experience shares these same properties of self-reinforcement and maintenance. As a result, flow in one period of time should be related to flow in a subsequent period. As such we hypothesize that:

H7 ($F_{it-1j} \rightarrow F_{itj}$): the past experience of flow (F_{it-1j}) increases the current experience of flow (F_{itj}).

However, the impact of flow on the decision outcome is likely to differ from the general findings on positive mood. Unlike general mood, where feelings of certainty arise due to the perception of a high level of skill relative to the challenge of an activity (note that most general affect studies rely on simple tasks), flow supports increased levels of challenge. This appears to reverse the depth of processing, and leads to improved decision performance (Dahl and Moreau 2007). Particularly, in complex decision settings positive mood aids information processing by encouraging more flexible, thorough and efficient analysis (Isen 2001). Hence, the level of challenge appears to moderate decision performance under a positive mood. In line with this conjecture, that the flow experience will relate to an improved accuracy of decisions during an instrumental activity because of the challenge component required for the flow experience. That is, we hypothesize that:

H8 ($F_{itj} \rightarrow AC_{itj}$): the experience of flow (F_{itj}) improves the accuracy of choice (AC_{itj}).

Figure 2 illustrates the relation between the above hypotheses and provides a compensatory model of experience binding in the construct of flow. In our discussion we identified flow through the challenge and skill of an activity. Leveraging on the psychological literature we proposed that excessive challenge, which is frequent during extended purchase decisions, can be compensated by the palliative properties of gameplay. Compensation between these different activities is plausible due to an incidental transfer of experience from one activity to another, where positive experiences substitute for the negative ones. In a dynamic sense, the experience of flow reinforces perceptions of skill in an activity, and encourages more accurate decisions.

--- Insert Figure 2 about here ---

METHOD

The value of engaging customers through enjoyable experiences is well recognised by managers, and has received increased attention in scholarly literature (Van Doorn et al. 2010; Leeflang 2011). Engaged customers tend to be better informed, more empowered, and more willing to take part in co-creating value with firms and other customers (Payne, Storbacka, and Frow 2008; Higgins and Scholer 2009). They are also more likely to initiate brand-related interactions with the firm, and provide greater levels of positive word-of-mouth about the brand or organization. Further, an engaged customer is more likely to search for obscure (e.g., highly technical) product- or brand-related information, share it with other customers, and communicate product improvement requests back to the firm (Sawhney, Verona and Prandelli 2005).

To engage customers in such activities, we developed an online retail environment for consumer electronics. The website was unique because it relied on principal–agent conjoint tasks. In these tasks, the preference weightings for products/services are typically predetermined by a fictitious person (the “principal”) and provided to participants who act as an independent third party (an “agent”) to the principal (Grossmann et al. 2005). To make the principal–agent task seem more natural, researchers often provide a scenario or context for the decision task. For example, Lurie (2004) uses a principal–agent task in which participants (the “agents”) are asked to help a fictitious friend (the “principal”) select a new calculator from a range of alternatives. We asked participants to assume the role of a customer advisor (the “agent”) who helps other customers (the “principal”) select appropriate electronics products (e.g., stereo systems, television sets, mobile phones, etc.). In relation to our theory, the conjoint task represented instrumental behaviour. Such behaviour is relevant for online retailers who often rely on customer reviews and recommendations to supplement existing product information. Figure 3 illustrates a conjoint task from the experiment.

Along with the conjoint task, on the store’s website, we provided a casual game based on a popular Tower Defence scenario. Participants in the game defend against invading waves of creatures (‘Creeps’) that attempt to escape the designated playing zone. To stop a Creep, participants use in-game credits to purchase defensive towers and place these strategically inside the playing zone. Participants are required to make choices based on the purchase, placement, and sale of defensive towers. Each game consists of 50 waves of Creeps that arrive at 20-second intervals. Each wave has 10 Creeps, and if any one of these Creeps escapes from the playing zone, a game life is deducted from a maximum of 20 lives. The game is complete once a participant successfully stops all 50 waves of Creeps or runs out of lives. In relation to our theory, each game (i.e., 50 waves of creeps with win/loss) represented a round of compensatory behaviour. Figure 4 illustrates gameplay from the experiment.

Experience infusion relied on a series of connections between the conjoint task and gameplay. Firstly, we created a longitudinal design, where participants in our experiment repeatedly help other customers select their electronic products. Secondly, their performance in each task is measured against the utility of the best alternative in the decision set using the weighted additive value rule (WADD) (Bettman et al. 1993) and their performance score is provided as feedback to the participant at the end of each task. Thirdly, the score from the conjoint task affects the number of game credits according to a custom formula (see Appendix A). Finally, to manage the schedule of compensatory behaviour we automatically separated each conjoint task with one gameplay.

Design and Procedure

One hundred and five university students took part in a longitudinal experiment, which was held in a dedicated computer laboratory. Each participant was paid a flat fee of $35 for their time, and the experiment took an average of one hour. The longitudinal design separated the experiment into three blocks. In block one; participants attempted four rounds each consisting of a conjoint task followed by a game. We used a 2 (choice complexity: high/low) × 2 (game difficulty: high/low) between subjects full factorial design to manipulate the difficulty of the conjoint task and the game in block one. Choice complexity altered the number of attributes and attribute levels in a product, while game difficulty made the 'Creeps' faster and more resistant to tower defences. For each of the four rounds in block two, we replaced the game with a filler task (i.e., reading an unrelated Wikipedia article) and we re-introduced the game again for the next four rounds in block three. In block three, we counterbalanced the between subjects design from phase one. Table 1 summarises the design.

--- Insert Table 1 about here ---

At the end of each round we measured perceptions of the flow experience, challenge, and skill in the conjoint task, and during gameplay (including the filler task in block two). For the flow experience we used a scale based on Jackson, Martin, and Eklund (2008) (α = .906, CR = .910). For challenge and skill we applied a single-item indicator based on Sosik, Kahai, and Avoli (1999) in order to minimise fatigue and disruption from repeated questionnaires. While there can be limitations to using single-item measures with cross-sectional designs, the repeated measures design helps to mitigate some of the undesirable weaknesses caused by single-item indicators (Mathwick and Rigdon 2004). We also recorded the accuracy of conjoint task decisions according to WADD (Bettman et al. 1993), which provides a normative standard for multiattribute decision making, and saved the score achieved at the end of each game. At the end of the experiment, we took measures of experiment realism, attention, and standard demographic questions.

Before attempting the actual experiment, all participants practiced one round of gameplay with the goal of achieving a personal best score in the game. They then proceeded with the set of conjoint tasks which followed the gameplay in each round until the final round. During the experiment, participants could not communicate with others and completed the experiment while wearing noise-cancelling headphones.

--- Insert Figure 3 about here ---

--- Insert Figure 4 about here ---

ANALYSIS

Interpreting the conceptual model in Figure 2, we introduced a system of equations (1 to 4), where the feedback effects of flow are autoregressive (AR) with one period lag (i.e., *t*-1) for each individual, and where all variables are transformed to natural logarithms. Hence the coefficients can be interpreted as elasticities. That is:

$$SC_{itj} = \alpha^{SC} + \theta^{SC} F_{it-1\mathrm{j}} + \varepsilon_{itj}^{SC} \quad (1)$$

$$SG_{itj} = \alpha^{SG} + \theta^{SG} F_{it-1\mathrm{j}} + \varepsilon_{itj}^{SG} \quad (2)$$

$$F_{itj} = \alpha^{F} + \lambda^{F} F_{i,t-1,\mathrm{j}} + \beta^{F} CC_{itj} + \gamma^{F} SC_{itj} + \theta^{F} CG_{itj} + \delta^{F} SG_{itj} + \varepsilon_{itj}^{F} \quad (3)$$

$$AC_{itj} = \alpha^{AC} + \beta^{AC} F_{itj} + \varepsilon_{itj}^{AC} \quad (4)$$

where:

i = an individual customer;

t = a single time period (single task);

j = block identifier (i.e., block one, two or three);

CC_{itj} = the perceived challenge of the choice task for customer *i* at time *t* and block *j*;

SC_{itj} = the perceived skill with the choice task for customer *i* at time *t* and block *j*;

CG_{itj} = the perceived challenge of the game/filler for customer *i* at time *t* and block *j*;

SG_{itj} = the perceived skill with the game/filler for customer *i* at time *t* and block *j*;

F_{itj} = the Flow experience perceived by customer *i* at time *t* and block *j*;

F_{it-1j} = the previous Flow experience perceived by customer *i* at time *t–1* and block *j*;

AC_{itj} = the objective choice accuracy of choice achieved by customer *i* at time *t* and block *j*; and

ε_{itj} = the utility error term for consumer *i* at time *t* and block *j*, which captures measurement errors, random individual behaviour, and other factors that are not included in our model.

For simplicity, we used CG_{itj} and SG_{itj} notation to represent perceptions of challenge and skill throughout, including the filler task in block two. We analyzed the above equations as a panel dynamic system using a Bayesian approach with a random walk Markov Chain Monte Carlo (MCMC) using WinBUGS, allowing a burn-in of 1000 samples. We assumed uniform priors for all the variables (i.e., uninformative priors).

RESULTS

Experience Infusion. Two models were estimated in this section. Firstly, Model 1 was estimated assuming no difference among the three blocks of four rounds each. This means that all parameter coefficients in the panel regression are assumed to be equal across the three blocks. Secondly, Model 2 was estimated assuming the parameters of the model vary across the three experiment blocks. In this way, Model 1 served as a control against which we compared the overall effect of experience infusion. Our expectation was that Model 2, which accounts for the manipulation of game infusion, provides a better representation of the data.

--- Insert Table 2 about here ---

Indeed, as shown in Table 2, the Deviance Information Criterion (DIC) (Dempster 1974) is lower for Model 2 (1269.67) compared to Model 1 (2410.87). This implies that Model 2 fits the data better. The DIC was selected because it is better suited to Bayesian (MCMC) estimation, and in comparison to similar measures (such as Bayesian Information Criterion and Akaike Information Criterion) applies a more appropriate penalty for additional model parameters. In the case of Model 2 this implies a more conservative test.

Accordingly, to test our hypotheses, we relied on Model 2's parameter estimates. Summarised in Table 2, our initial hypotheses about the effect of the perceived challenge, *H1:* $(CC_{itj} \rightarrow F_{itj})$, and the perceived skill during the decision task, *H2:* $(SC_{itj} \rightarrow F_{itj})$, on the experience of flow did not pan out. In each case, we could not reject the null based on the 95% credible interval. In hindsight, this result is not surprising as experience infusion is predominately driven by gameplay. In particular, as expected, the perceived challenge of gameplay reduced the flow experience in block one of the experiment, $H3$: $\left(CG_{itj} \rightarrow F_{itj}\right)$, $\hat{\theta}^F_{Block\ 1} = -.142; SD = .038$); whereas the perceived skill increased it, ($H4$: $\left(SG_{itj} \rightarrow F_{itj}\right), \hat{\delta}^F_{Block\ 1} = .633; SD = .030$). For both the 95% credible interval did not include zero.

Interestingly, in block 2, replacing the game with the filler task did not change the relationship between the perceived skill and flow, though the effect was roughly half of that of the gameplay ($\hat{\delta}^F_{Block\ 2} = .375; SD = .036$); however, the 95% credible interval did not include zero. Importantly, when we re-introduced the game in block 3, we replicated the effects from block 1 and recovered the strength of the coefficients ($H3$: $\left(CG_{itj} \rightarrow F_{itj}\right)$; $\hat{\theta}^F_{Block\ 3} = -.155; SD = .046$) and ($H4$: $\left(SG_{itj} \rightarrow F_{itj}\right)$; $\hat{\delta}^F_{Block\ 3} = .575; SD = .034$).

Consequently, even though experience infusion through gameplay was successful, it functioned somewhat differently to our hypotheses based on the existing literature. In our sample, the effect was predominantly driven by perceptions of skill, and may have benefited from the switch to an easier task. On the whole, the results are consistent with our initial speculation that game infused activities contribute to an improved experience during decision making, and do so independently as implied by a compensatory view of experience binding.

Dynamics of Experience Infusion. To understand how different activities can share the experience of flow, we examined the inter-temporal effects where flow feeds back to perceptions of skill in the choice and the gameplay activities. Our expectation was that the improved flow experience resulting from the infusion of experience through gameplay would increase the sense of skill during the subsequent choice task, **H5** ($F_{it-1j} \rightarrow SC_{itj}$). As shown in Table 2, this is what we found. The coefficients are positive and zero was not included in the 95% credible interval in block 1 ($\hat{\theta}^{SC}_{Block1} = .126; SD = .048$), in block 2 ($\hat{\theta}^{SC}_{Block2} = .276; SD = .045$), and in block 3 of the experiment ($\hat{\theta}^{SC}_{Block3} = .132; SD = .046$). As noted above, the filler task in block 2 was associated with lower levels of flow than the gameplay; nonetheless, even low levels of flow experience appeared to benefit the perception of skill in the choice task; which is encouraging from our perspective.[1]

Similarly, the experience of flow appears to bind within gameplay experiences, as it increases the sense of skill in subsequent plays of the game, **H6** ($F_{it-1} \rightarrow SG_{it}$). This effect was observed in every block of the experiment ($\hat{\theta}^{SG}_{Block1} = .350; SD = .043$), ($\hat{\theta}^{SG}_{Block2} = .453; SD = .039$), ($\hat{\theta}^{SG}_{Block3} = .262; SD = .045$). The slight drop in the effect in block 3 is consistent with diminishing returns to increased skill as participants become used to playing the game towards the end of the experiment.

[1] We note that the size of the coefficient reflects an incremental effect over the intercept level, which is lower during the filler task in block 2.

In addition to binding experiences over time, we speculated that flow is self-reinforcing, since it has been described as the quintessential marker of an intrinsic process that functions as a reward in itself (Csikszentmihalyi 1988). Accordingly, we hypothesized that experiences of flow will reinforce flow in the subsequent periods **H7** ($F_{it-1j} \rightarrow F_{itj}$). Our results are consistent with this interpretation and show positive and statistically valid (zero was not in the 95% credible interval) results in each block of the experiment ($\hat{\lambda}^{F}_{Block1} = .163; SD = .036$), ($\hat{\lambda}^{F}_{Block2} = .587; SD = .030$), ($\hat{\lambda}^{F}_{Block3} = .139; SD = .038$). Since the level of flow remains more or less constant in block 2, the carryover effect is a lot higher than the other blocks where the extent of flow is impacted by the extent of the activity.

The above results show that the dynamics of experience infusion are broadly consistent with our theorizing. This lends support to our interpretation of flow as a psychological binding agent within and between instrumental and intrinsic processes, and across time periods. These results confirm the 'mechanics' by which experience infusion appears to operate.

Effects of Experience Infusion. We found that experience infusion improves experience during decision tasks. Yet, just as importantly, we were interested in the effect experience infusion has on the accuracy of customers' decisions. Traditionally, adding another task to a decision problem complicates it by increasing the information load, which might reduce the quality of decision making (O'Reilly 1982; Caniëls and Bakens 2011). In contrast, based on our theorizing about experience regulation, we hypothesized an opposite effect and proposed that flow experience from gameplay will improve accuracy of choice **H8** ($F_{itj} \rightarrow AC_{itj}$). This could be considered a counter intuitive suggestion; however, our results bear it out. We observed improved decision accuracy in each block of the experiment ($\hat{\beta}^{AC}_{Block1} = .528; SD = .036$), ($\hat{\beta}^{AC}_{Block2} = .119; SD =$

.049), ($\hat{\beta}^{AC}_{Block3} = .126; SD = .036$) as a result of increased flow experience. The effect seemed to diminish with repeated decisions, which is consistent with a learning curve pattern over time. However, the finding is important because it suggests that experience infusion is not only helpful in improving customer experience, but also benefits the customer in terms of an improved decision outcome.

GENERAL DISCUSSION

The value customers assign to products or services relies not only on expected satisfaction from their use, but also on the shopping experience (Mathwick, Malhotra and Rigdon 2001). However, engaging customers in enjoyable shopping experiences has proven challenging for managers (Berry, Carbone, and Haeckel 2002). A key problem is that processes which improve customer experience can sometimes adversely affect the accuracy of customer decisions. This leaves a manager with a conundrum: how to engage customers in shopping experiences that are autotelic (i.e., a reinforcement to themselves) given a marketing system where effortful search and evaluation are required for good decision making.

In this article we present our investigation into one solution to this conundrum called "Experience Infusion". Rather than redesign a marketing system, which may be costly, we took it as is and combined it with the seemingly unrelated activity of playing a computer game. This offers a 'plug and play' approach to improved customer experience, where an intrinsically enjoyable activity (e.g., gameplay) is infused with an instrumental activity of decision making. The apparent feasibility of this approach relies on a number of insights into customer experience consumption previously not identified in the marketing literature.

First, the empirical results (reproduced along multiple replications of a longitudinal experiment) suggest that experience consumption is a compensatory process. Just as the Multiple Attribute Utility Theory predicts customers will tradeoff positive and negative product attributes (Keeney and Raiffa 1976) we find that customers tradeoff experiences in a similar way. Experiences resulting from different activities, such as choosing a stereo system or playing a casual game integrate to form an overall assessment of experience consumption. Crucially, the activities that generate these experiences can be independent of each other. Specifically, in our sample, the challenge and skill of choosing a product did not affect the flow experience; however, perceptions of the challenge and skill during gameplay, which we intertwined between the decision tasks, did improve the overall experience.

Second, the compensatory nature of experience consumption implies experience regulation. Regulation means that customers select activities to maintain an overall level of experience by balancing the skills and challenges from different activities. Accordingly, seemingly unrelated behaviors may be interpreted as customers' attempts at experience regulation. In particular, when customers switch from shopping to other activities they may be doing so to regulate their overall experience.

We demonstrated this by testing a panel dynamic system of equations using a Bayesian (MCMC) approach to capture the simultaneous interaction between different activities and experiences over time. This approach allowed us to accurately estimate the effects of the flow experience, where flow mediates between activities, time periods, and outcomes in a highly parameterized structural model.

This type of modeling highlights the complex role of the flow experience during experience infusion. Analyzing the mechanism of experience infusion we observed that flow experience is self-reinforcing, and showed how it feeds back to affect perceptions of decision-making activities. In particular, we showed that improved experience from gameplay increased perceptions of skill in a subsequent decision activity. That is, experiences transferred between different activities. Crucially, we demonstrated that gameplay not only improved the shopping experience, but also improved the accuracy of choices. Consequently, customers benefit from experience infusion both in terms of improved experience during shopping and better final decisions, which should result in greater long-term satisfaction.

Managerial Implications. Engaging customers in experience consumption has been a challenge for managers. Not all marketing systems are easily redesigned to improve customer experience. For many customers, search, evaluation and selection are still as mundane and arduous as ever. Our research offers significant, practical implications for managers in these situations.

Based on a realistic scenario, we showed how linking an enjoyable experience with an existing shopping task can be achieved in an online context. The apparent simplicity of this approach may help with actual application. While our study offers a possible template by which experience infusion may be applied, it does not require the significant redesign of existing marketing processes.

Importantly, our findings imply that experience consumption is a holistic approach and should be considered from the perspective of experience regulation. The key insight for managers is that the shopping experience, which managers try to optimize, is not isolated from other customer behaviors. Managing experience requires managing these ‘other’ customer behaviors in addition to the shopping process.

Traditionally, ‘other’ behaviors have been considered a nuisance and a likely exit point for the customer. However, we argue for a different perspective. According to experience regulation, we suggest managers should embrace these compensatory customer behaviors and infuse them in the design of a shopping experience. By managing compensatory activities, managers can improve customer experience while keeping customers engaged with shopping. Rather than limiting these behaviors, managers can use them to supplement perceptions of skill or challenge missing from ordinary shopping activities. When applied carefully, our approach offers twofold rewards: customers report a better overall experience, and they make more accurate choices which can improve long-term satisfaction.

Future Research Directions. Our study demonstrates the concept of “Experience Infusion”. However, numerous extensions can be envisaged. For example, we used a casual online game as an instance of compensatory behavior. However, other activities may offer alternatives to games. Our results hinted that even reading an unrelated Wikipedia article could affect experience. The effects were much weaker than those of gameplay, but future research could investigate an extended range of compensatory activities. It is possible that some of these activities may be context specific, and may work better or worse for different customers. While we focused on understanding the process, investigating moderating variables could establish the boundary conditions of experience infusion.

Even though we focused on an online context, experience infusion should be relevant to brick and mortar settings as well. The concept is the same. Splicing an extended shopping experience with short, enjoyable diversions should work as well in brick and mortar contexts. Investigating these diversions in the context of sales force training, or store layout design, for example, might prove particularly fruitful. For instance, interlacing a supermarket shopping isle full of utilitarian products (say dishwashing liquids) with few hedonic products (e.g., home fragrances) could be a simple way to manage customer experience in that section of the store.

The important point for managers is to ensure continuity between instrumental and intrinsic activities. In our study, participants proceeded according to a sequential design, where every decision was followed by a short gameplay before returning to the next decision. This, in effect, forced participants to take part in the compensatory activities. From an experimental perspective this design was appropriate. However, in less controlled settings, it would be important to investigate the transition points between instrumental and intrinsic activities to minimize dropout rates.

Accordingly, further research should examine the boundary conditions of experience infusion, expand it beyond the online context used in our study, and investigate the transitions between intrinsic performance activities in less controlled settings.

APPENDICES

Appendix A: Calculation of Weighted Additive Value Rule (WADD)

Choice outcomes are calculated as the accuracy of a participant's selected alternative compared to the utility of the best alternative in a decision set. The accuracy of each alternative is judged through the compensatory weighted additive value rule (WADD) (Bettman et al. 1993), which is a normative standard in the literature. To calculate accuracy, we followed Payne, Storbacka and Frow (1993): each alternative in the decision set is scored by multiplying attribute importance weights with its corresponding attribute values. The difference is then taken between the score of the chosen alternative ("choice") and the lowest scoring alternative (i.e., "worst"), and divided by the difference between the highest scoring alternative ("best") and the worst alternative. This creates a value between 0 and 1 where values closer to 0 represent optimal choice accuracy. Equation 15 displays the decision accuracy calculation according to Payne et al. (1993).

$$A_{it} = \frac{WADD_{(choice)} - WADD_{(worst)}}{WADD_{(best)} - WADD_{(worst)}} \tag{15}$$

Where:

A_{it} = the decision accuracy for customer i at time t;

WADD = compensatory weighted additive value rule.

For clarity in the dataset, we recoded the 0-1 values such that values closer to 1 represent a more optimal decision. This reduces bias in interpretation and ensures consistency in the dataset. Due to efforts to reduce dominated alternatives in the choice task, several choices in each decision set were within 5% of the optimal alternative. To ensure these differences were discernible in statistical analysis, the measure of decision accuracy was rescaled with a logit transformation. Conjoint models with rescaled logit transformations report greater validity than standard maximum utility models (Moore et al. 1998). In the case of current data between 0 and 1, a small constant (.05) was applied to both ends of the scale to avoid log(0) error. The resulting logit transformation is reported in Equation 16. After logit transformation, a natural log_e was applied to ensure comparability to other measures.

$$DA_{it} = \frac{(.05 + DA)}{(1.05 - DA)} \quad (16)$$

Where:
A_{it} = the decision accuracy for customer *i* at time *t*;
DA_{it} = the transformed decision accuracy for customer *i* at time *t*.

Appendix B: Manipulation Check

Participants assigned to the high choice complexity condition (vs. low choice complexity) reported increased levels of challenge. This result was found overall across all experiment blocks $\left(CC_{High} = 1.434; CC_{Low} = 1.073;\ t_{CC}[1146.867] = 11.900;\ p < 0.001\right)$, and in each block separately: block 1 ($CC_{High} = 1.481;\ CC_{Low} = 1.180;\ t_{CC}[380.805] = 6.570;\ p < 0.001$), block two ($CC_{High} = 1.416;\ CC_{Low} = 1.036; t_{CC}[382.794] = 6.924;\ p < 0.001$), and block three ($CC_{High} = 1.406;\ CC_{Lo} = 1.003; t_{CC}[382.242] = 7.223;\ p < 0.001$). Similarly, participants found the high game difficulty (vs. low game difficulty) more challenging overall ($CG_{Hard} = 1.489;\ CG_{Easy} = 1.400; t_{CG}[838] = -2.797;\ p = 0.005$). However, when analyzed separately by block, the effect was only statistically significant in block one ($CG_{Hard} =$

1.537; $CG_{Easy} = 1.429; t_{CG}[405.731] = 2.918;\ p = 0.004$)[2]. We speculate participants may have learned to play the game over time, which reduced perceptions of challenge in block three ($CG_{Hard} = 1.441;\ CG_{Easy} = 1.370; t_{CG}[418] = 1.384; p = 0.167$). As anticipated, the within subject manipulation of experience infusion, where in block 2 we replaced gameplay with a filler task, reduced participants' perceptions of the flow experience leading to a lower intercept coefficient in block two: ($\alpha^F_{Block1} = 1.563\ (0.271); \alpha^F_{Block2} = 1.373\ (0.402); \alpha^F_{Block3} = 1.632\ (0.315);\ F[2,1258] = 67.449;\ p < 0.001$).

[2] Note, we removed the game in block two and replaced it with a filler task of reading an unrelated Wikipedia article.

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List of Figures

Figure 1. Parallel processing and binding of process utilities between performance and intrinsic activities.

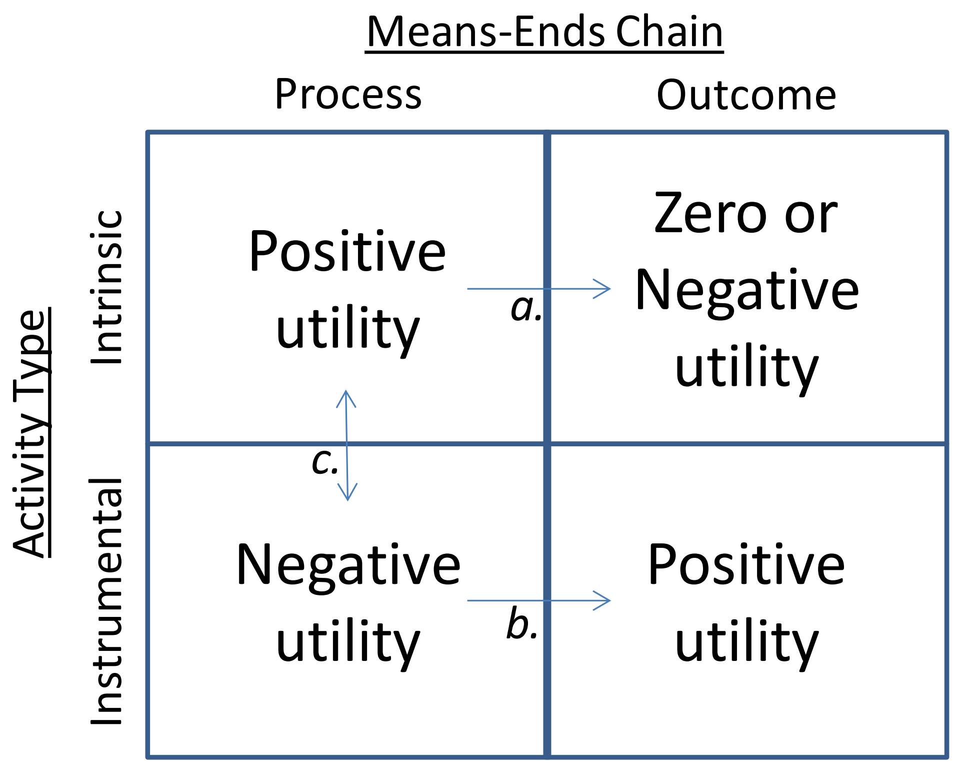


Figure 2. Conceptual Model

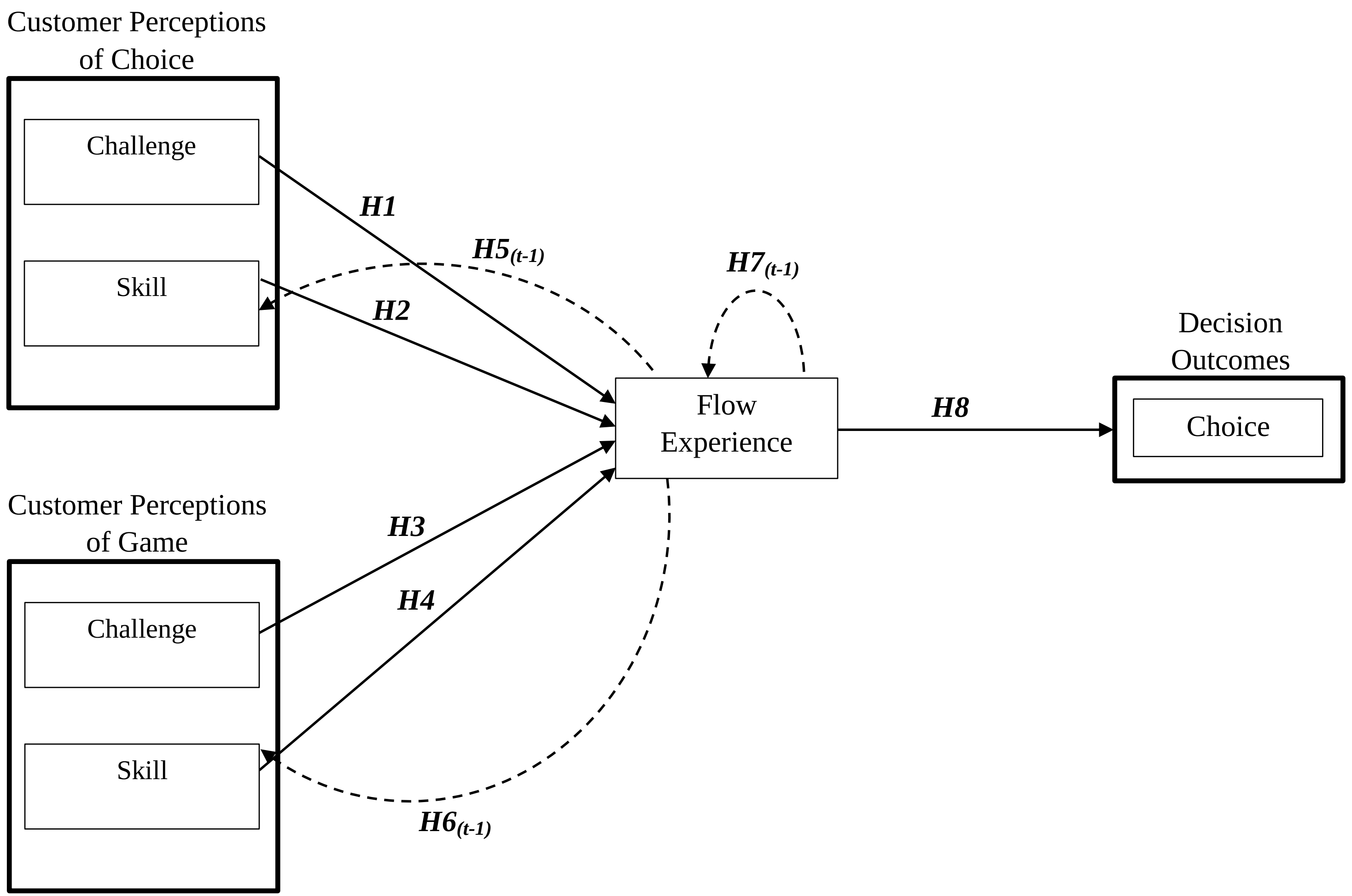
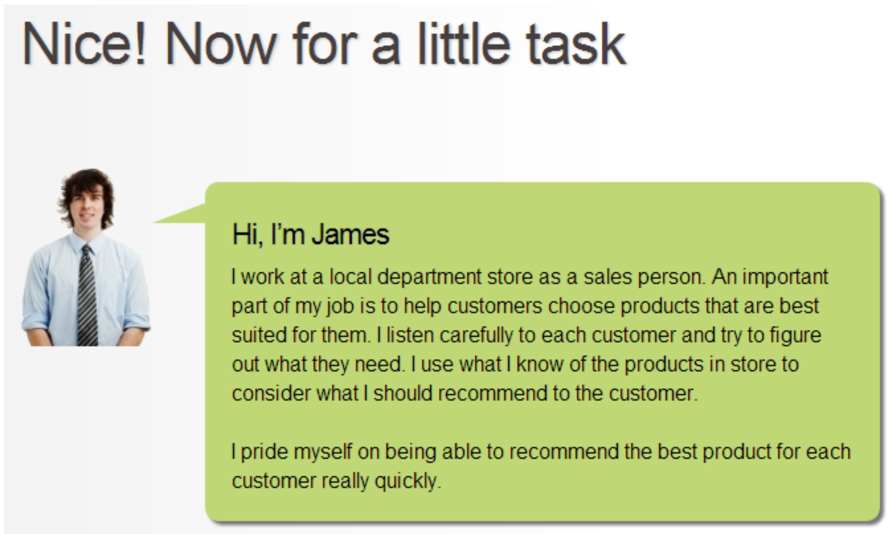
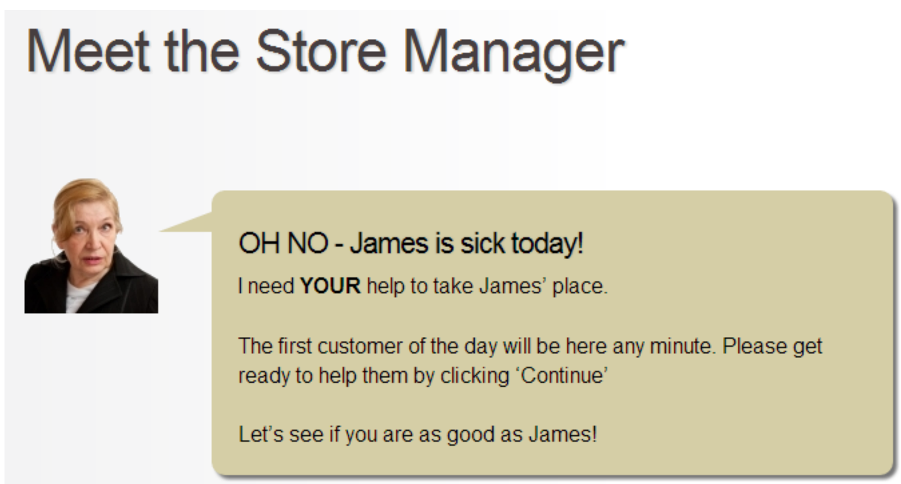


Figure 3. Conjoint Task

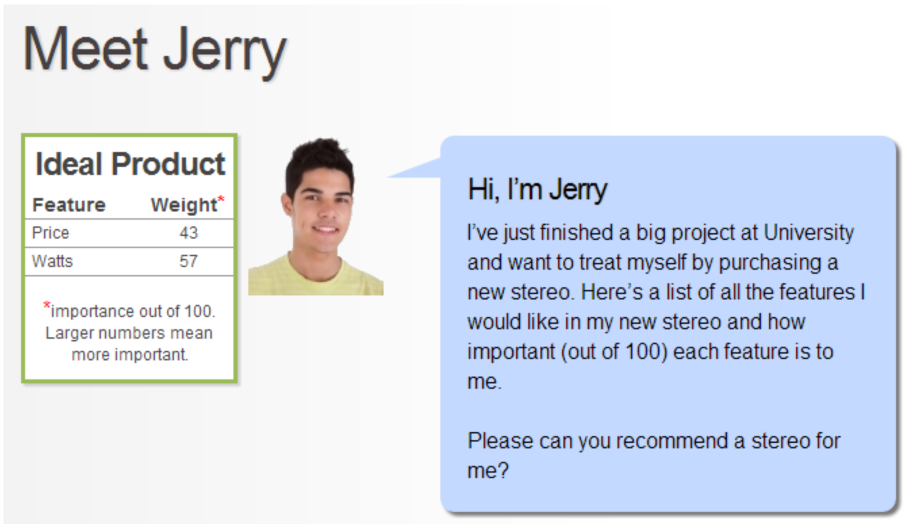
Screen one:



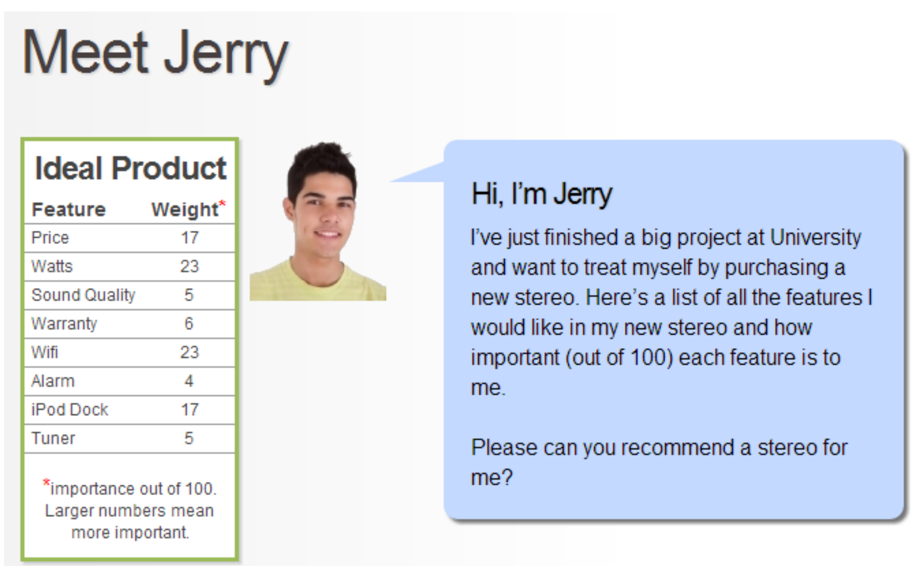
Screen two:



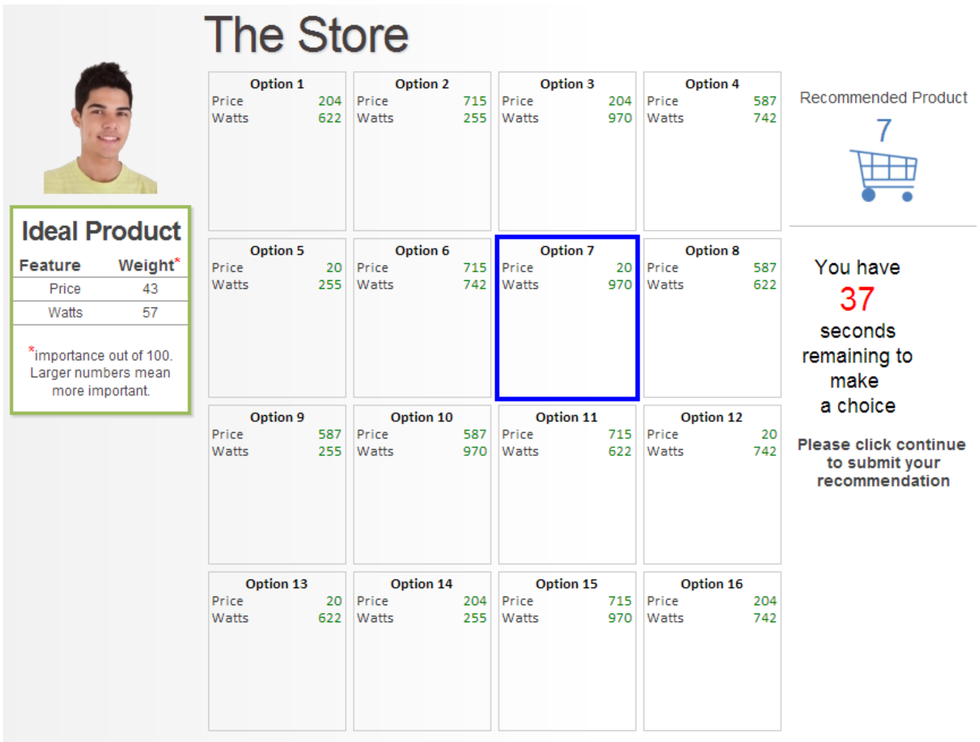
Screen three (Version A: Task Agent for Easy Choice Task)



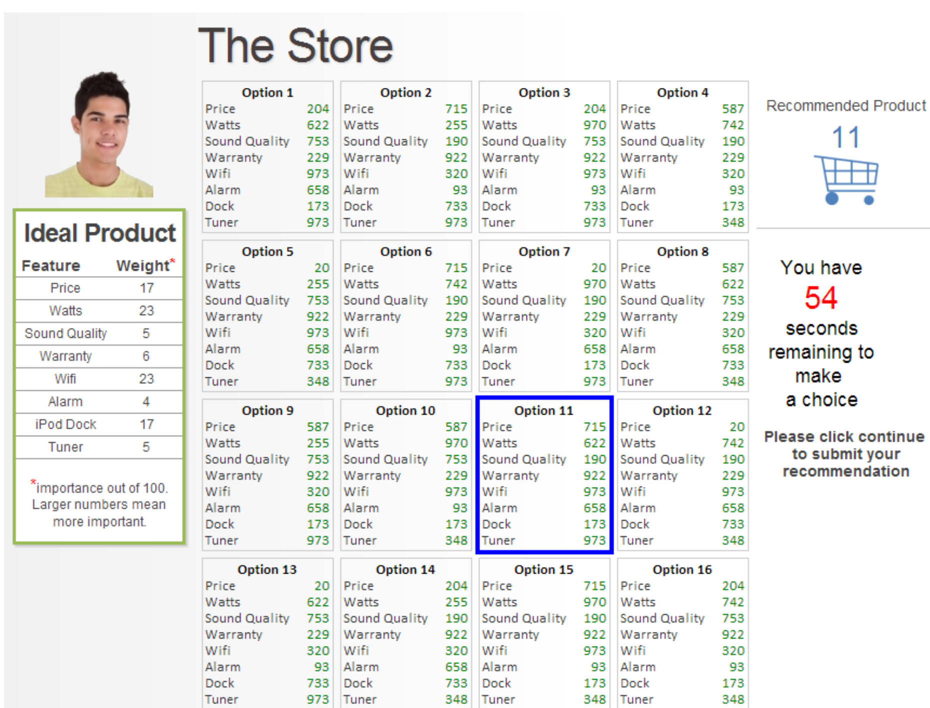
Screen three (Version B: Task Agent for Hard Choice Task)



Screen Four (Version A: Easy Choice Task)



Screen Four (Version B: Hard Choice Task)



Screen five: Example of feedback after Choice Task

Participants received feedback about the accuracy of their choice selection. This feedback was designed to remain thematically congruent with the choice task narrative. As part of this process, participants provided their perceptions of the challenges and skills related to the choice task.

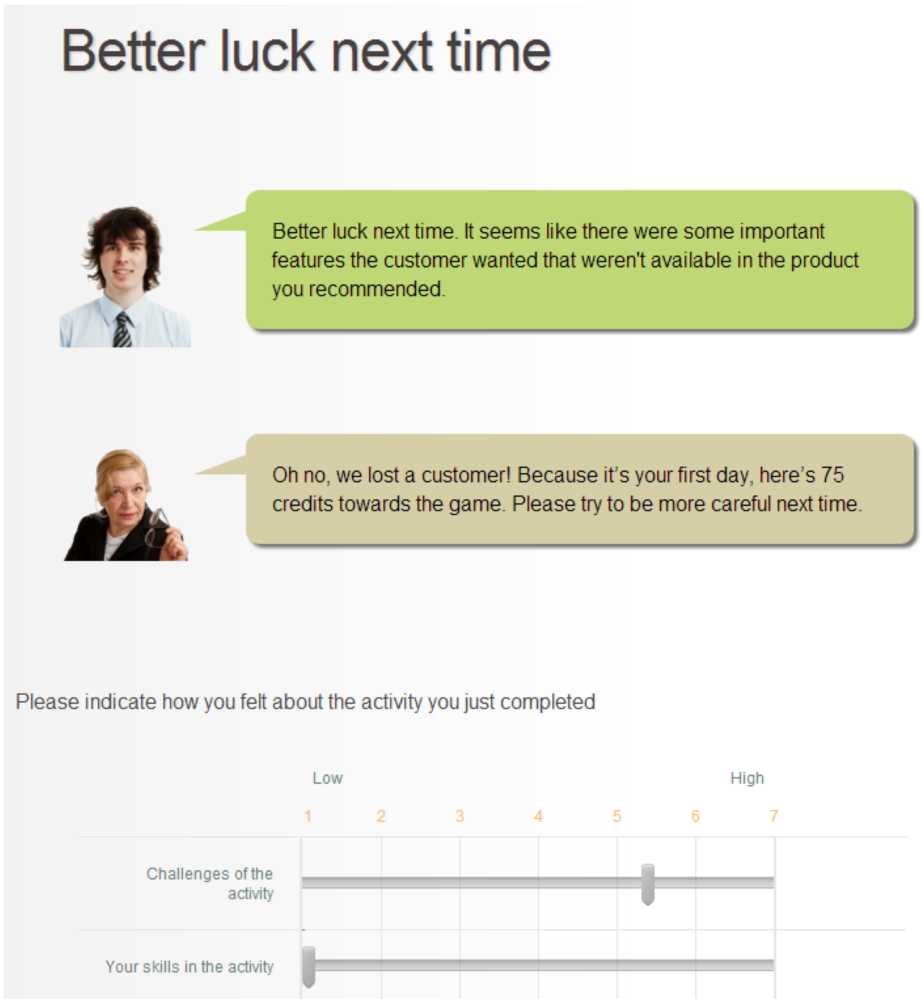
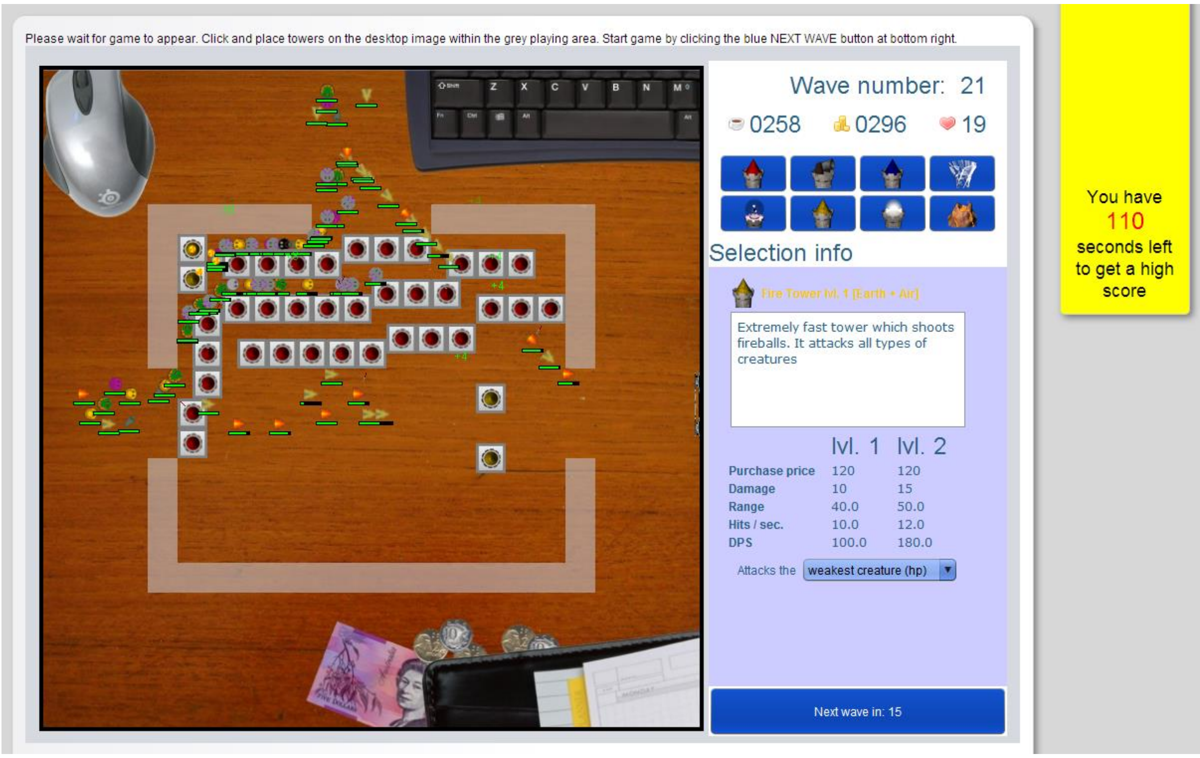


Figure 4. Gamplay for Experiment



LIST OF TABLES

Table 1. Summary of Research Design

	Fused Experience			**Unfused Experience**			**Fused Experience**	
	Set 1: Rounds 1-4			**Set 2:** Rounds 5-8			**Set 3:** Rounds 9-12	
	Task Complexity			Task Complexity			Task Complexity	
Treatment	*Choice*	*Game*	*Break*	*Choice*	*Filler*	*Break*	*Choice*	*Game*
1	Hard	Easy	/	Hard	n/a	/	Hard	Hard
2	Easy	Easy	/	Easy	n/a	/	Easy	Hard
3	Hard	Hard	/	Hard	n/a	/	Hard	Easy
4	Easy	Hard	/	Easy	n/a	/	Easy	Easy
5	Hard	Easy	/	Hard	n/a	/	Hard	Hard
6	Easy	Easy	/	Easy	n/a	/	Easy	Hard
7	Hard	Hard	/	Hard	n/a	/	Hard	Easy
8	Easy	Hard	/	Easy	n/a	/	Easy	Easy

Note: Each Set contains four rounds (i.e., repeated four times);
Each round represents one time period (*t*);
There was a 5-minute break between each Set;
Training: Yes = game training provided, No = no game training provided;
Choice: Hard = High complexity, Easy = Low complexity;
Game: Hard = High complexity, Easy = Low complexity;
Filler: n/a indicates that the Filler Task was identical for all participants.

Table 2. Summary Result Output for Model 1 and 2

Hypotheses	***Model 1 (Constrained Analysis)***		***Model 2 (Constrained Analysis)***					
			Block 1 (Fused Choice and Game)		**Block 2 (No Game)**		**Block 3 (Fused Choice and Game)**	
	Unstandardised Beta	Unstandardised Beta	Unstandardised Beta	Standardised Beta	Unstandardised Beta	Standardised Beta	Unstandardised Beta	Standardised Beta
H1: $(CC_{it} \rightarrow F_{it})$	-.040* (.016)	-.063* (.025)	-.032 (.021)	-.054 (.037)	-.022 (.025)	-.033 (.037)	-.033 (.025)	-.062 (.046)
H2: $(SC_{it} \rightarrow F_{it})$	-.060* (.016)	-.088* (.023)	-.027 (.022)	-.044 (.037)	-.059* (.025)	-.080* (.034)	-.044 (.024)	-.078 (.042)
H3: $(CG_{it} \rightarrow F_{it})$	-.001 (.017)	-.153 (.025)	-.101* (.027)	-.142* (.038)	-.008 (.024)	-.013 (.037)	-.098* (.030)	-.155* (.046)
H4: $(SG_{it} \rightarrow F_{it})$	.427 (.018)	.590 (.019)	.411* (.025)	.633* (.030)	.275* (.028)	.375* (.036)	.397* (.030)	.575* (.034)
H5: $(F_{i,t-1} \rightarrow SC_{it})$	.133* (.028)	.133* (.028)	.082* (.031)	.126* (.048)	.437* (.074)	.276* (.045)	.197* (.073)	.132* (.046)
H6: $(F_{i,t-1} \rightarrow SG_{it})$	.282* (.025)	.302* (.026)	.215* (.028)	.350* (.043)	.711* (.068)	.453* (.039)	.328* (.058)	.262* (.045)
H7: $(F_{i,t-1} \rightarrow F_{it})$	.137* (.015)	.203* (.022)	.065* (.014)	.163* (.036)	.675* (.037)	.587* (.030)	.119* (.033)	.139* (.038)
H8: $(F_{it} \rightarrow AC_{it})$	.430* (.091)	.137* (.029)	.859* (.214)	.528* (.036)	.059* (.025)	.119* (.049)	.411* (.164)	.126* (.036)
Goodness of Fit	**Model 1**		**Model 2**					
CMIN/DF^{+}	26.828		34.046					
CFI^{+}	.398		.520					
DIC	2410.870		1269.670					
Effective No. of Parameters	23.740		34.046					

*Note: Results from Bayesian estimation are reported as regression estimates coefficients with standard deviation on the parentheses. *: 95% credible interval does not include zero.* $^{+}$*: the results were obtained from the maximum likelihood estimation.*